

AN
ARRANGEMENT
OF
BRITISH PLANTS.

ACCORDING TO
THE LATEST IMPROVEMENTS,
OF THE
Linnean System;

INTRODUCTION TO THE STUDY OF BOTANY.

ILLUSTRATED BY COPPER PLATES.

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THE SEVENTH EDITION.

IN FOUR VOLUMES:

INCLUDING THE MOST RECENT DISCOVERIES, AND NUMEROUS CORRECTIONS
ILLUSTRATIVE OF THE VEGETABLE KINGDOM.

BY WILLIAM WITHERING, M.D. F.R.S.

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ROYAL SOCIETY OF LONDON OF THE UNITED KINGDOM, &c. &c. &c.

"Nor are the Plants, which Britain calls her own,
Few, or unlovely." MASON.

VOL. I.

LONDON:

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"Where'er we search, the scene presents
 Wonders to charm th' admiring sense,
 And elevate the mind;
 Nor e'er blooms a single spray,
 That quivers in departing day,
 Or turns to meet the morning ray,
 But speaks a Power Divine."

"No science can be prosecuted with so little expense, and with so much advantage, as to the means of acquiring it, as BOTANY; none certainly is at once so subservient to the improvement of both the mental and corporeal powers." JOHN'S'S PRACT. BOT.

PREFACE

TO

THE SEVENTH EDITION.

"Increscunt quotannis Scientiæ, emendantur quotidie."

THUNBERG.

AT a period when scientific researches are pursued with unusual ardour, and proportionate success; when no department has made greater, or perhaps so rapid advances, as that of Botany, a Seventh Edition of the "Arrangement of British Plants" may be expected to appear with suitable improvement.

Having availed ourselves, to a considerable extent, of such advantages, as likewise of the kind communications of our valued correspondents; it may be generally remarked that scarcely a page will be found that does not present some alteration or addition, either original, or derived from the best authorities.

In thus returning the compliment which other writers have conferred on us, we have only acted in conformity with that liberality which ought ever to be inseparable from intellectual pursuit.

"Vetulus damusque vicissim,"

with due regard, nevertheless, to the "suum cuique;" so that whether the additional paragraph excite approbation, or provoke reprehension, the entire responsibility will rest with the Editor: (E.)

How far these attempts at improvement have been

judiciously conducted, or otherwise; is not for us to determine; but we may without presumption assure a discriminating, yet candid public, (who have already fostered this undertaking by a demand for nearly ten thousand copies,) that no sacrifice of time, of labour, or of expence, has been spared to render this new impression worthy of a favourable reception, and consistent with the progress of knowledge.

The student habituated to the slow and precarious course of scientific investigation, will be well aware that even years may be consumed, without producing that decided elucidation of a complex subject which might, to the novice or superficial investigator, appear to be of far less difficult attainment. To such competent judges we would, with all deference, submit the result of our extended labours.

In conformity with wonted usage, in earlier Prefaces, now cancelled, and also in extenuation of the delay which has unavoidably occurred in the production of the work, we shall take leave to advert to the principal novelties which have for so extended a period engaged our attention; promising, however, that the Third Edition, (and last of the Author), will still speak for itself.

Of the subsequent ones, especially the Fifth, it may be permitted to recapitulate the introduction of more than one hundred additional species of Pheogamic, and half that number of Cryptogamic, plants, with extended notices of their economical uses, and, very many new stations. The Indexes were also arranged in more lucid order, desirable from the accession of at least one thousand

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names. The published authorities to which on that occasion we were chiefly indebted were, the "Flora Britannica," of Smith; "English Botany," of Smith and Sowerby; "Annals of Botany," by König and Sims; "Botanist's Guide," of Turner and Dillwyn; "Flora Cantabrigiensis," of Relhan; "Menthæ Britannica," of Sole; "Materia Medica," of Swecliaur, &c. &c. In the Cryptogamic department, it should likewise be stated, that important assistance was derived from the beautiful "Historia Fucorum," of Turner; the "Synopsis" of the same author; the elaborate essays of the Bishop of Carlisle and Mr. Woodward, in the "Linnean Transactions;" and the "British Conservee," of Dillwyn, whose accurate plates render the wonderful structure even of the minuter species objects of high interest, as exhibiting in several instances the connecting link between the animal and vegetable kingdoms.

"Shade, unperceived, so softening into shade.

"And all so forming an harmonious whole."

Neither were the labours of Roth, Vaucher, De Candolle, Hedwig, Persoon, Bridel, and Swartz, neglected; nor far the proteal Lichens, the "Methodus" of Acharius, whose ingenuity has constituted twenty-three genera from what had previously been considered only one, and separated *Lichen scriptus* alone into twenty-four species!

In preparing the present Edition our object has become more decidedly twofold; as combining the strictly scientific, with the popular character.

* Even transmutations have been suspected, and actually figured by Agardh, who insists that the filaments of *Oscillatoria flexuosa* become changed into animalcula. Von Alg.

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Without in any degree abating our anxiety to render the former department, to the best of our judgment and opportunities, at least not inferior in accuracy to its contemporaries, towards the accomplishment of our secondary purpose, we have ventured to introduce into the Notes such a mass of information (not, however, indiscriminately, nor, as we trust, irrelevantly to the principal subject), as may prove interesting to a majority of our readers, and in a form so little obtrusive that we would fain hope to escape censure even from the fastidious. The line of demarcation must be distinctly obvious to all; and though we have cautiously endeavoured to avoid profaning the scientific page with desultory trifles, we would warn the hypercritic from too rigidly scrutinizing what may comparatively appear trivial, if not derogatory; and admonish him that these "*disjecta membra*" lie humbly at his feet, in the very garb of humility, invoking the favour of those gentler spirits to whom the discovery of a vein of sentiment, or even, perchance, a gem of poetry, may not prove repulsive.

To convince our readers that we have not sacrificed consistency by following the devious course of by-paths, however inviting, we can assure them that no patient investigation has been spared to attain the utmost precision in those discriminative characteristics which alone can regulate the judgment of the incipient Botanist.

The unquestionably Natural Orders of *Orchideæ*, *Graminæ*, and *Siliquosæ*, (*Crucifera*), are now presented, (synoptically, where not otherwise), according to the latest suggestions of Brown, and *Umbellifera*

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conformably with the views of Smith; without interfering with the more full descriptions of our Author.

The Genera have been entirely revised, and rendered more strictly correspondent with the Flora of the British Isles. In this labour we have not scrupled to benefit by the acumen of those recent authors, (as in every instance more particularly acknowledged), to whom the lovers of the science are so largely indebted. Reserving the privilege of independent judgment, we have, in some instances, felt ourselves justified in departing from the exact course of these leading stars, though not without both hesitation and regret. Notwithstanding this occasional dissent, about forty of the newly-constituted Genera will appear on our pages; and such as have not been fully recognized, will be found in synoptical tables, and also synonymized in the index.

The like procedure has been followed, and the same liberty exercised, in respect to the Species. In almost every instance, not only an actual comparison with the plant itself has been made, but of the descriptions by different authors; and thus has a more correct standard in various instances been obtained. While curtailing unnecessary repetition, and throwing peculiarities into more direct contrast, we have, nevertheless, carefully avoided the ground of censure, "*dum brevis laboro esse obcurus fio.*"

Some novelties have been admitted as unquestionably indigenous; whilst others are noticed in brief, merely to attract further attention.

Conceiving that the contents of a local Flora should be strictly limited by geographical position,

rather than political connexion, we have ventured to reject two or three species* which have found, perhaps, a too ready admission into some few works of credit, as natives, not in fact of the British Isles, but of those situated on the French coast.

By the exclusion of the localities of many commoner plants, we have been enabled to record some thousands of additional and well-authenticated stations of the rarer species. In the selection of these we have not been unmindful of such districts, or particular spots, as may prove otherwise attractive to the tourist. The pleasing memorials thus collected may enhance the interest even of classic ground, and at future periods revive the fast fading remembrance of by-gone days. To prevent the disappointment too frequently arising from the common error of mere general directions, we have supplied localities so definite, that the passing stranger may not be inconvenienced by an useless search. The rapacity of some collectors, (assuredly no genuine lovers of science), in absolutely eradicating such rarities, has indeed afforded a pretext for these mortifying mysteries, but we would fain hope a better taste is now predominant.

These habitats not only extend throughout England, Scotland, and the Principality, but also to Ireland, whose Flora has rarely received due consideration, and for the elucidation of which we are particularly indebted to the researches of Threlkeld, Wade, Ratty, Murphy, and Templeton.

* E. g. *Ixia* (*Trichomena*) *Bulbocodium*, *Centisorea Ismardi*, &c.

The traveller will still find the advantage of possessing nearly all the productions of the floral season, (extending far beyond the limits of the strictly "formosissimus annus,"

————— When cheerful May, that fills the woods
With music, scatters the green vale with flowers,
And hangs a smile of universal joy
Upon the cheek of Nature.")

compressed into two (the second and third) volumes. The first volume, as heretofore, contains the elementary parts, with a complete *Genera Plantarum*; the fourth, the larger portion of the more obscure tribes, a majority of which may be most advantageously studied in winter. For, though our new matter somewhat imperatively demanded the additional accommodation of a fifth volume, by employing a smaller, yet equally distinct, typography, and an enlarged page, we have been enabled to preserve the more commodious, and less expensive, form.

The facilities afforded by copious Indexes, and the inconveniences frequently arising from the want of them, have prompted the enlargement of these indispensable appendages; chiefly indeed by the admission of a more complete Synonymy, become doubly requisite since the prevalent propensity to divide and subdivide the ancient Genera, not less than to multiply Species, too often by the elevation of mere varieties. Without such assistance, (and that afforded by the synoptical view also given of whatever proposed Genera and Species we have not seen sufficient reason to adopt), these changes and innovations would be attended with much perplexity.

It has likewise been our wish to attain to a more uniform and correct orthography in the names of places; which, however, as subject to remarkable variation at different periods, has proved no very easy task.

To ensure the proper pronunciation of Latin words, it has been customary, in accentuation, strictly to observe the syllabic division. From this rule in some instances, where a different position appeared more conducive to the object proposed, we have intentionally departed.

Some explanation may seem due to those ardent Cryptogamists who have both in print, and by private correspondence, urged the Editor to render this overgrown Class, (in itself more numerous than all the others collectively), at least as complete as those of the more perfect plants; but however flattering may be such an expectation to the talents of any one supposed capable of effecting so much, experience warrants the conclusion, that individuals far more highly gifted have hitherto failed to reduce these countless tribes to systematic order; and that, were it possible to adopt the necessary arrangement, not less than another entire volume must be appropriated to descriptions, which, (unaccompanied by graphic illustration), would, after all, convey but a very inadequate idea of their respective subjects.

Should it appear that Mycological studies, be they ever so beautifully depicted, cannot be rendered palatable to the generality of Botanists, it is but reasonable to infer that the addition proposed would prove still less acceptable to the uninitiated.

Not that we are ourselves insensible to the delicacy of texture, the curious conformation, or the exquisite symmetry, exhibited in innumerable instances, (when explored by the aid of art,) in this microcosm of wonders. But experience evinces that this particular branch of the science is almost daily becoming, and must inevitably become, even to the proficient, a separate study, fully available only to the lynx-eyed few.*

These remarks are peculiarly applicable to the ephemeral productions of our own humid and versatile climate; since, in all probability, few countries of equal extent in the known world can exhibit so interesting a brumal harvest to the Cryptogamist, or so uninterruptedly support the career of vegetation; for even our frosts and snows, with intervening thaws, rarely effect a desolation so complete as that occasioned by tropical droughts.

When we perceive that the unflinching labours, (chiefly as Fungists and Muscologists), both in Europe

* Besides the microscopic Parasites introduced in our Notes, innumerable others, whose sphere of existence is limited to the particular plants on which they grow, (and which alone can direct the Mycologist to their discovery), are represented in works more exclusively devoted to such subjects. Whence also it appears that the genus *Agaricus*, (with its derivative *Amanita*), contains not fewer than eight hundred species, foreign and domestic; that *Sphæria* alone, (notwithstanding many formerly so considered are now disposed of under other genera, as *Hysterium*, &c.) amounts to about five hundred, and that one single genus has been actually subdivided into a dozen! Vide Greville's *Stot. Crypt.* also the *Systema Mycologicum* of Fries.

Nor are these difficulties diminished by the same species often assuming totally dissimilar appearances at different stages of growth, which renders it almost necessary to watch them through every period. Vide Purton's *Append. Mid. Fl.* p. 271.

and America, of such patient investigators as Fries, Nees von Esenbeck, Albertini and Schweiniz, Link, Tode, Schleich, Rebentisch, Ditmar, Sturm, Schrank, Stratuss, Kunze, Schmidt, Holmskiold, Funck, Agardh, Lyngbye, Lamour, Bory, Mohr, Mougeot and Nestler, Schwaegrichen, Wahlenberg, Opitz, Eschweiler, Trattinick, and others, exclusive of divers better known foreign and native authors of the older school, with the more recent, though not less discriminative, notices of the accurate Purton, have not proved altogether conclusive; and that the pre-eminent Greville, after creating new genera and species in a ratio almost *ad infinitum*, should himself denounce this elaborate exercise of ingenuity as unstable, convinced that other combinations must be substituted;* and, further, should it appear that even the truly interesting illustrations of the latter author of what he justly describes "a sort of hopeless accumulation of indefinable substances" have actually been abandoned for want of encouragement;† we are free to confess that, (possessing not the clue of Ariadne), we are deterred from involving ourselves in a maze, the unravelling of which has foiled far more dexterous hands.

Greater accuracy in this illimitable department we have bestowed some pains to insure, though, even now, we are but too conscious that it may not be exempt from errors.

English names have, for the first time, been added throughout this difficult Class.

We would here also present due acknowledgments

* Vide Grev. Scot. Crypt. 314.

† Wide do. 296.

to those well intentioned individuals who have either courteously, or *otherwise*, taken the trouble to aim at our reform: and as a propitiatory offering to the professed Fungist; nay more, as an acceptable boon to all; to induce the general student to devote more attention to the subject, (notwithstanding our last impression contained nearly as many Cryptogamic as Phenogamic plants), an abundant selection of the most interesting new discoveries has, on the present occasion, been introduced, with references to the best figures of each: not indeed, (for reasons above stated), altogether under their peculiar Class, but, so far as the Parasitic Fungi extend, (to the number of nearly one hundred), in the Notes respectively appertaining to their foster-parents.

The Algaë, especially the Submersed, though individually satisfactorily illustrated, (of which we have amply availed ourselves), have, in respect to arrangement, continued to perplex the most ingenious adepts.

The whole Order of Musci has been advantageously collated, and carefully synonymized, with the admirable "Muscologia Britannica" of Hooker and Taylor. Several curious additions have been admitted; as likewise, from the very elegant Monograph of British Jungfermanniæ by Professor Hooker.

To the antiquarian and philologist, it is presumed, the unusual appendage of our aboriginal names to each plant, (so far as ascertainable) will be no undesirable acquisition. In the selection, those of undoubted antiquity have been preferred, to the exclusion of mere modern inventions. Even a superficial comparison of these Ancient British, Erse, and Native Irish designa-

tions, cannot fail to detect many obvious coincidences ; so palpable indeed between the Irish and Erse names, as plainly to denote their common origin. As no work extant contains a sufficiently comprehensive nomenclature of this description, it was judged expedient, while yet possible, thus to endeavour to rescue these reliques of former ages from a fast approaching oblivion,

The principal sources of information in this attempt have been, in the language of the Ancient Britons, or Welsh, the “Welsh Botanology” of the Rev. Hugh Davies, who has not unsuccessfully laboured to dispel the confusion, and to reconcile the discrepancies, of the Davyes, the Lhwyd, and Jones, of other times : in the Erse, Gaelic, or Gaulic, (probably the oldest and purest dialect of the Celtae, and vestiges of which may be traced to the present day in the Scottish Highlands), the “Flora Scotica” of the Rev. John Lightfoot, and by that author chiefly derived from, or corroborated by, the critical knowledge of the Rev. Mr. Stuart, of Luss : while for our supply in the Ancient Irish we are under much obligation to the “Synopsis Stirpium Hibernicarum” of Dr. Caleb Threlkeld, whose extensive list appears to have been in great measure deduced from that eminent Botanist, and collector of these terms, the Rev. — Heaton, of Dublin. And should this our key, (however incrustated with the genuine *ærugeo*), prove but instrumental in preserving a correct synonymy, it may still serve to open whatever curious usages and observations have been noted by our ancestors, perchance even the mysteries of the Meddygen (Physi-

cians of) Myddfai, whose family, it is credibly asserted, practised the healing art, at the same place in Caernarvonshire, from the twelfth to the eighteenth century! Whatever of value may be contained in such obscure records, can only be rendered available by a right apprehension of the proper names, for "*Nomina si nescis, perit et cognitio rerum.*"

Notwithstanding the extension of classical education, to very many who may be desirous of cultivating a taste both for literature and science, the names of our Genera, whether simple, or compounded from the dead languages; bestowed in commemoration of celebrated naturalists, or, yet more absurdly, in honour of heroes, and divinities, (a practice still too prevalent, and against which, as conveying no appropriate signification, we cannot but enter our protest, however sanctioned by antiquity and not inelegantly stiled in the former case, the Apotheosis of Botanists,) or, more aptly, referring to the known properties, or external peculiarities of the plants designated, equally stand as a dead letter, unintelligible, or conveying no adequate meaning. We have therefore attached to each, the etymons, derivations, or roots, so far as they admit of satisfactory explanation; thus clothing, as it were, the generic nomenclature with ideas, conducing more readily to impress them on the memory, and to render them more or less instructive, as they may be either immediately or remotely connected with the subject in question. The notices appended to the personal names, though brief, will, nevertheless, we imagine, prove not altogether unacceptable.

The Dictionary of Botanical Terms, (now also

duly accentuated), will be found to be considerably augmented, not only by the accession of many new *technical words*, but also by extended physiological observations, which must ever constitute the very soul of the science.

* Cavils having been raised against innovation, and in deference to the opinions, (however contradictory), of several very obliging correspondents, we deem it incumbent, (notwithstanding the explanation offered by the Author in his Preface to the Third Edition),* again briefly to advert to the alteration whereby the original Classes, (depending on the number, *situation*, proportion, or connexion of the stamens), have been simplified, and rendered more uniformly consistent, by the exclusion of those founded merely on situation.

To vindicate ourselves from an imputation of unbecoming pertinacity, it may suffice to assure those who have evinced an interest in the matter, that on referring the question to naturalists whose skill and judgment ought to bear the stamp of authority, it appears that on this point the wisest differ; and having ourselves received unequivocal testimony that the said innovation has been attended with advantages, especially to the learner, while the real grounds of objection have never been distinctly specified, (the neutrals admitting the change at least to be productive of no practical inconvenience, and that even where any could be imagined, it was immediately counteracted by an appeal to the Index), we feel justified rather than incur the memorable fate of the Old

Man to whom the Phrygian Fabulist introduced us in our earlier days) in submitting the present Edition in the same form as that of the four preceding ones.

We may, possibly, be required to state our reasons for not having more decidedly recognised, or in some degree incorporated, the embryo Natural Arrangements which have, at different periods, engaged attention. We cannot, indeed, plead ignorance of the endeavours which have been made from time to time, especially on the Continent, to introduce a system (founded on the presumed affinities, analogies, and physiological structure of vegetables, as developed both in the reproductive and nutritive organs, however, in too many instances resting on minutiae to be detected only by the lens, and therefore not only peculiarly liable to occasion optical delusion, but available, even with such assistance, only to those whose visual organs may be unimpaired); in contradistinction to the Linnean or Artificial, and denominated the Jussieuian or Natural Method; not because such enlightened views originated with the celebrated M. de Jussieu the elder, or his nephew of the same name, but that those ingenious persons laboured more successfully than others for the promulgation and extension of them.

In the existing state of Botanical Science in England, when we are threatened, in no very measured terms, and in some few instances, it is to be regretted, in a tone altogether unbecoming in any one not so blinded by prejudice as to be insensible to what has

invariably been acknowledged,—(the very important services rendered by the Swedish Philosopher, who produced order out of confusion, establishing an Augustan age in Botany; and to whom the encomium of Ray on another great man may, with at least equal propriety, be applied, “Non rei tantum Herbariæ, sed totius Historiæ Naturalis *peritissimus*;)” with nothing less than a total subversion of long-cherished opinions, it would seem scarcely possible to preserve a strict neutrality.

Most freely do we admit that the attempt to subdue obstacles by many deemed insurmountable, must merit every candid consideration; since it has not only received the sanction of some of the most distinguished philosophers, but in itself exhibits, in theory at least, the most seductive plausibility.

Nevertheless, in common justice it ought not to be forgotten, that had one could have been more convinced of the eligibility of such a method, if reducible to practical purposes, than Linnæus himself.

“Primum et ultimum hoc” (Method. Nat.), “in Botanicis desideratum est.”*

But the difficulties to be overcome, appeared even to his penetrating genius, as to general utility, insuperable. Neither, in the present comparatively advanced state of scientific knowledge, would it savour so much of prudence as presumption, dogmatically to pre-judge the issue of this inquiry. Well will it be if the rising generation find not their best energies paralyzed by conflicting opinions.

Pending the agitation of the question, and, indeed, until the dazzling phantom be fairly reduced to some tangible shape, we trust we shall stand excused for holding fast, and endeavouring to direct others, by that sure guide, which, founded as it is on the most ingenious application of obvious and incontrovertible facts, and surviving as it has done the wreck of many ephemeral schemes, has received the approval of the best informed; maintained its high reputation for more than a century; facilitated the introduction of innumerable votaries within the sanctuary of Nature; and of which Royenus has predicted;

“ Si quid habent veri vatis præsagia, Floræ
Structa super lapidem non ruet hæcce domus.”

There is not a more indisputable axiom, in ethics or physics, than “*Primus gradus sapientiæ est res ipsas nosse*,” and cordially concurring in the principle that the investigator of nature can never rest satisfied with a knowledge of the mere names of things; that “science is not science till revealed;” assuredly that system which most readily secures the attainment of so indispensable a foundation, and best prepares the way for ulterior progress, (a system by no means, as some would gratuitously insist, artificially compounded of little else than technicalities, devoid of ideas, and resting, as it were, *in limine*), will continue to be preferred; especially for elementary instruction, on which future improvement must mainly depend.

Highly interesting as the tracing out of just analogies must ever be, these unknown depths and hidden mysteries are to be fathomed, if at all, only by the superior sagacity of the De Candolles, and the

Brown, (if there be more than one), of the age. Probably the most acute intelligencies have yet much to learn, ere, they become fully aware of the extent of these difficulties, and at length convinced, as have been their predecessors, that "there is an inquisition where all human knowledge terminates;—that the bounds of Nature have never been defined."

The irrefragable proof might well rest on past experience: we may nevertheless be allowed, in support of the proposition, to cite the very apposite opinion of one of the warmest advocates of the recently revived Method: "After all that has been effected, and that *is likely to be accomplished hereafter*, there will always be more of difficulty in acquiring a knowledge of the Natural System of Botany, than of the Linnean.'

The above observation must, of course, be understood as referring exclusively to the less exceptionable portion of the novel arrangements; for, in respect to that most numerous, obscure, and yet truly natural grand division, constituting the Cryptogamia Class of Linnæus, the Acotyledones† of Jussieu, and more especially as regards the Lichens and Fungi, "it may be safely affirmed," continues the same able author, "that we know nothing of the limits of the Genera and Species of either of these extensive Orders."

* Lindley's Synopsis. Pref. p. 11.

† Cellulares of De Candolle; in contradistinction to the more perfect Phanogamia, the Cotyledones of Jussieu, Vasculares of De Candolle.

The present being no fit occasion for entering controversially into the merits of the respective systems, (discarding a multitude of witnesses), we shall rest satisfied with adducing some very few select passages, commencing with the testimony of an individual not less distinguished in science than in literature, not less liberal than enlightened, Mr Roscoe.

The admirable 'Essay on the Artificial and Natural Arrangements of Plants' by that gentleman,* as also one of a subsequent date 'on Systems and Methods in Natural History,' by J. E. Bicheno, Esq. F. L. S. we would strongly recommend to the attentive and unprejudiced perusal of the Botanical student; before adopting any particular introductory course, or suffering his imagination to be led captive by the fascinating guise of high pretension. "Nor will it be denied," says the former of these intelligent writers, (ever ready to espouse whatever carries with it the semblance of utility), "that the arrangement of a system of vegetables founded upon true natural distinctions, would be in the highest degree gratifying. It is not, therefore, surprising that so many attempts have been made to accomplish this most desirable object; but attractive and splendid as it may be, and certainly as it is known to exist, it is not likely ever to be fully disclosed to our view.— "The majesty of Nature" glances before our sight, but as often as we attempt to retain her, she eludes our efforts. Her vegetable productions, are so numerous, their characteristics often so difficult to

ascertain; they are related to each other by so many ties, that it is in vain to expect that we shall ever be able clearly to define them, and accurately to seize upon the true distinctions; so as to combine the whole in the precise order in which they were primarily disposed by her hand. In necessarily adopting some method which should enable us to distinguish plants from each other, and to designate them by appropriate names, it became indispensable to have recourse to art." And in justice to the illustrious Swede, Mr. Roscoe adds, "With the conviction of the real existence of natural Genera and Orders, no one was more deeply penetrated; and to interfere with these relations as little as might be consistent with his primary object of a complete arrangement, was his constant solicitude." In corroboration of which, beyond contradiction, the Genera that remain, with some few trivial exceptions, are uniformly natural. Nor are the sound aphorisms of Linnæus, touching these points, unworthy of being held in remembrance.*

In conclusion, Mr. Roscoe equally insists "It may safely be denied, that the study of plants in their Natural Orders can supply the want of an Artificial System."

In accordance with these views of the subject, are the sentiments of another excellent practical

* "*Ordines naturales non constituunt methodum absque clave.*"

"*Méthodus artificialis itaque sola valet in diagnosi, cum clavis M. naturalis vix ac ne vix possibilis sit.*"

"*Ordines naturales valent de natura plantarum—Artificiales in diagnosi plantarum.*"

writer : * — “ Jussieu may sharpen the tact of an advanced practitioner, in throwing light upon some of the recondite parts of Botany, but he can never supersede Linnæus to a beginner, since it is scarcely possible, by the assistance of Jussieu alone, an unpractised inquirer would be able to ascertain the knowledge of a plant with which he was previously unacquainted.” Again, referring to the latter systematist, “ To a practised philosopher it affords many curious and unexpected analogies, but as a perfect system of Natural Arrangement, it shews *the hopelessness of such an attempt*, as greater ingenuity and learning can be expected from no author.” ..

And were not these warning voices sufficient to deter from a too hasty and opposite conclusion, the following extract from the valuable publication of Mr. Thomson† must also have due weight : “ Many Botanists have endeavoured to produce systems of arrangement according to these natural affinities; but hitherto they have not succeeded, not even excepting Jussieu, whose very learned and valuable work is far from answering the purposes for which it was intended.” Indeed, on examining the whole vegetable kingdom, the attempt to divide it into natural orders and families offers *difficulties* which, in our present state of knowledge, appear *insurmountable*. The artificial method of classification was therefore thought of; and that of Linnæus is the best and most perfect that has yet been contrived.

* Vid. British Botanist, p. 260, et seq.

† Lectures on the Elements of Botany, by Anthony Todd Thomson, F. L. S. 1 vol. 8vo. 1822. p. 30.

This the young Botanist must study with the greatest care. Without a knowledge of it, no one can be accounted a Botanist."

That "Natural Orders instruct us in the nature of plants; artificial ones teach us to distinguish one plant from another," cannot but be universally admitted: and equally undeniable is it, that for the proper apprehension of the former, the assistance of artificial means will ever be found advantageous, if not indispensable. To the generality of Botanists the truth of this proposition will, we expect, be sufficiently obvious;—were any corroboration necessary, the experience of the late President of the Linnean Society has declared, in allusion to Natural Methods;—~~It~~ It is evident that no such mode of classification can, at present, serve the purposes of analytical investigation, to make out an unknown plant.* And further, in conclusion, acknowledges himself, "almost inclined to revert to the idea of Linnæus, that we are not competent to define technically any Natural Orders, without so many, and such paradoxical exceptions, as to destroy all consistency."

If, indeed, we reflect on the consequences of a like innovation in a sister science, whereby in Entomology, the system of Fabricius, for a season, among our Continental neighbours, had well nigh superseded that of

* Vid. Smith's Grammar of Botany. Pref. p. xiii. Do. p. 195.

+ Witness the long list of "Plantæ incertæ sedis: "—such unnatural associations as the notable instance of *Ribes* with *Cactus*, (the Currant Bush with the Prickly Pear) and we fear we might add, *cum multis aliis*.

Linnæus; we shall derive but slender encouragement hastily to abandon what has stood the test of long experience. For, as regards this singularly parallel instance, and salutary warning, Mr. Spence observes; "So far is experience from having confirmed the assertion of its author, that the Linnean System is only calculated to introduce confusion into the science, that the very system professing to dissipate that confusion is even now fast sinking into oblivion, while the Linnean Orders, and Generic characters, with such improvements as reason and analogy suggest, are revered to by the most acute and learned Entomologists of the age."*

Thus having sufficiently directed attention to the sentiments of those whose opinions merit every consideration, it behoves us to guard against the imputation of having conspired, (however futile might be the attempt,) to impede the progress of improvement. On the contrary, our readers may rest assured, that we hail with gratulation every judicious essay, to further so laudable a purpose. May those benefactors to science who boldly, on the eagle wing of genius, take the lead, go on and prosper; even to the subversion of popular and long established ideas, where such prove obstacles in the way of real advancement. May they not only acquire a well-earned and increasing reputation, but the still higher satisfaction of having aided the extension of truth in the natural world.

Thus impressed, it cannot but be agreeable to learn that the facilities, or inconveniences, of what is termed

the Natural System, are likely to be brought to a more decided test in our own country; Professor Lindley having announced the intention to initiate his pupils by such principles; with the peculiar advantage of his own ingeniously (yet *artificially*!) constructed analytical tables for each Class and Order.*

Though not aware of any material utility from the insertion of merely the Natural Orders; as an object of some little interest, and in conformity with a prevalent custom, we have, so far as regards the Phænogamia, connected both those of Linnæus and Jussieu with their respective Genera, in the Index to our First Volume.

Having concluded our remarks on this important branch of the subject, we would further take leave to advert, to speak within compass, to our five thousand additional Annotations.

The diversified matter therein presented, must be considered as little more than an experiment, (and perhaps a somewhat crude one), to ascertain how far the taste of this intellectual age will foster an improved tone of feeling. The reception of a few similar essays already made both in this country and on the Continent, would almost justify a favourable inference; and with such materials as truth and nature afford, should our endeavours to excite an increased interest lead but to disappointment, we

* Vide 'A Synopsis of the British Flora;' by John Lindley, F. R. S. 8vo, 1829.

fear we shall have to submit to the mortifying sentence of incapacity.

Should it however appear, that by relaxing from the uncompromising austerity of the purely scientific writer; (but without in the smallest degree detracting from the accuracy of our *Critica Botanica*),—by occasionally enlivening our page with something more engaging than proverbially dry description; (scarcely to be rendered palatable by the utmost perspicuity);—by presuming to entwine our Wild Garland even with the pearls of poesy; we shall, in some degree, have succeeded in removing the reproach of dullness from a science, which, when most deeply studied in all its comprehensive bearings, becomes but the more attractive, affording gratification inexhaustible—~~if~~ if by means so simple we shall have, as it were,

“—Purg’d with Euphrasy—
The visual nerve,———”

of those who are too apt to view the phenomena of nature “with eyes open indeed, but seeing not;” then shall we with some confidence claim pardon for the venial offence, of having indulged a propensity to which the venerated Fathers of Botany were sufficiently prone, (as witness their ponderous tomes), and from which even grave Professors of more modern times are not altogether exempt.

Here also it behoves us once more to deprecate the severity of criticism, for having inserted, contrary to general usage, and, as it may possibly appear to some, irrelevantly, incidental references to a distinct branch of Natural History.

For ourselves, we can discover no real objection, why the subjects of the several Kingdoms of Nature should not be permitted mutually to illustrate each other:—why, in the present instance, our more immediate study should not be suffered to direct the attention of the diligent inquirer to the wonders displayed in the province of Entomology; so far as may tend to stimulate, rather than fully gratify, a rational curiosity.

The inverse practice has been adopted with admirable effect,* and to a far greater extent than any such procedure could be contemplated here.

These collateral pursuits happen to be intimately, if not inseparably, connected: for it has been justly remarked, and by no incompetent authority, that “A knowledge of Botany is absolutely necessary in order to be able to collect insects with complete success:”—so, on the other hand, St. Pierre observes, “Plants are the habitations of insects; and it is impossible to give the history of a city, without saying something of its inhabitants.”

We, therefore, feel the less hesitation in introducing, at least by name, several hundreds of British Insects, (occasionally citing the best figures,) under the respective plants on which they chiefly subsist; and to which indeed, in numerous instances, they may be considered as decidedly parasitic, as the minute Fungi described in the same Notes.

“To these her valued miniatures,” says an elegant writer, “Nature has given the most delicate touch,

* Consult the elegant works of Donovan, Curtis’s British Entomology, &c.

and highest finish of her pencil." Beautiful, ever varying, and affording the happiest facilities for contemplation, as may be the vegetable tribes, it will readily be perceived, even by those but superficially acquainted with the insect race, that nothing can exceed the splendour of colour, or variety of figure, with which they are endowed: here, most inviting—there, as repulsive: or compare with them in the miraculous metamorphoses which the same individual, in its different stages of existence, is destined to undergo. Behold the chrysalis, the golden sarcophagus of the torpid reptile! The silken cradle of the inhabitant of air!

Does not even childhood kindle with joyous exultation in fervish pursuit of the lovely butterfly? or shudder with instinctive horror at the loathsome spider! And where shall we discover more impressive moral lessons, than when meditating on these universal favourites? How admirable an epitome of our own brief span; one hour basking in the sunshine of prosperity; the next prostrate in the dust! What a microcosm of this nether world, does the bee-hive, or the ant-hill present! As though in bitter mockery of proud man, therein may he behold his worst propensities; a fearful representation of bitter resentments, of fiend-like passions, implacable revenge, and even cannibalism in all its disgusting horrors! While for ingenious contrivance, indefatigable industry, and other concomitants of a well-ordered community, reason need not disdain to receive admonition from instinct.

These do indeed most convincingly proclaim that "they also are the formation of Supreme Intelligence, for a wise and worthy end, and may lead us by gentle gradations to a faint conception of the powers of infinite wisdom. They have calmed and amused some of us worms and reptiles, and possibly bettered us for our change to a new and more perfect order of being."*

" ——— To apprehend thus
[Draws us a profit from all things we see.]"

Earnestly would we recommend every reflecting mind, in the like spirit, to pursue this course of study. Then will become manifest, transfigurations, shadowing forth man's higher destiny; typical of the most sublime mysteries connected with our own mortal and immortal existence! emblems which arrested the attention even of the heathen sages of antiquity, and on which were founded their most instructive allegories.

The careful perusal of the various Entomological publications, cannot fail to yield a competent knowledge of what may prove not only interesting, but in no small degree edifying.

How far the indiscriminate rage for collecting, perhaps subjecting to painful experiments, to torture, and to death, these inoffensive little creatures, (not merely joint tenants of the earth on which we crawl, but

" ——— Rising from *their* tombs,
To higher life ;")

may be strictly defensible, for the gratification of common curiosity, as being at least problematical, may deserve some consideration.

Whether it be true that

“ ——— The poor beetle that we tread upon,
In corporal sufferance finds a pang as great
As when a giant dies ;”

or a somewhat less degree of anguish ; the vague assumption that the perceptions of the lower animals are not so exquisite as those of the larger and more complicated, will prove but an unsatisfactory extenuation ; for assuredly, the amiable mind, with whom the divine attribute of benevolence extends to every living thing, will, in the genuine spirit of humanity, wish that each should live its little day,

“ Nor needlessly set foot upon a worm.”

Then, indeed, be their powers of sensation, and enjoyment more or less acute, the generous disposition will well weigh, how far to reason and to conscience, in such a case, the end will justify the means.

Not that we would inculcate a morbid sensibility, neither rendering itself, nor others, happy ; but rather induce accountable beings to guard against the misapplication of that power, with which they, as lords of the creation, are, for a season, and doubtless, under high responsibility, invested.

Incapable as we are of bestowing the blessing of existence, how shall we be justified in uselessly depriving the most abject of it ! The same divine

hand conferred the boon on each, in due degree, and all have an inalienable right to enjoy it.

“ ——— If man's convenience, health,
Or safety, interfere, his rights and claims
Are paramount, and must extinguish theirs.
Else they are all,—the meanest things that are,
As free to live, and to enjoy that life,
As God was free to form them at the first,
Who, in His sovereign wisdom, made them all.”

COWPER.

With some complacency we turn from such considerations to the prosecution of a science, which, among other advantages, is totally exempt from the slightest imputation of cruelty; (unless, indeed, it were possible to revive the antiquated and unphilosophic notion of Empedocles, that even plants are endowed with so much of the sentient principle as to be susceptible of *happiness* and *misery* !)

It will be readily perceived that the eulogists of Botany are innumerable: a certain indication of the study, whether pursued as an elegant amusement, or with the perseverance of scientific ardour, being universally acceptable when rightly understood. And it cannot but be peculiarly gratifying to observe, that among the many eminent writers of the present day, none have treated the subject more advantageously

* The polite Athenians deemed not the ill usage of inferior dumb animals, even by the young and thoughtless, beneath the cognizance of their Supreme Court of Judicature: nor is the British Statute Book deficient in the grace of an enactment emanating from a like merciful spirit; though it may, perhaps, be regretted that the scale of our humanity should be too generally graduated according to the stature of the object !

than the talented females of Great Britain; who, no longer resting satisfied with a competent perception of externals, successfully aspire to an intimate acquaintance with the physiological organization, and wonderful adaptation of plants to the necessities of the animal creation.

Indeed, since the diffusion of knowledge has become general as it is desirable, it must be obvious to every one, that Vegetable Physiology should ever be inseparable from Systematic Botany. For, as M. Aubert du Petit-Thouars remarks, "It is essentially the basis upon which that science is raised; and the more this basis shall be understood, the more Botany, already so attractive in herself, will see the number of her disciples increase."

Neither should it be forgotten, that

" ———— She gives the fair
Sweet smiles and bloom, less transient than her own."

Nor is Botany devoid of a parallel wonder even with the entombed chrysalis; for how astonishing is the revival and expansion of the diminutive seed, buried "each in its little grave," till rising again in complicated structure, and in magnitude incalculably surpassing its original dimensions! A transformation which, as obviously prefiguring the verisimilitude of our own more glorious change, though daily before our eyes, is, nevertheless, counted marvellous by all but the dull, insensate, or the wilfully blind. And who else can resist the inquiry; what power less than divine could infuse into the germ of existence the self-adjusting principle to rectify its own position, in the soil, however heedlessly thrown in; or cause

the atomy of being to strike root downward, and to flourish upward, even against the universal law of gravitation! What less than Almighty, by complex mechanism, could impel the putting forth of leaves, and flowers, and fruits, in endless variety; or enable the inanimate particle, chemically as it were, to elaborate from the same mother earth and vivifying atmosphere, the elements, not merely of its own nutriment, but food both for man and beast, the deadly potion, and the healing balm!

May not the enamelled petals of Flora vie even with the wings of the gaudy butterfly? while in dispensing the richest perfumes, the superiority is all her own! And where are the guileless hours of infancy,

(“ ——— The hair all prank’d with daisies,”)

passed with more calm delight than in the brodered meadows, mid golden buttercups, cowslips, and violets blue!

Moreover, on the most delicate of the vegetable tribes, it may almost be said, that we are permitted to confer existence!

They, in whose bosoms the gentler affections are wont to make their chief abode, can best delineate the happy influences of such pursuits; we shall, therefore, be pardoned for offering an extract from the just encomium of an intelligent writer of the softer sex: “The study of the vegetable world has something of that soothing power which we experience from its actual presence. There is, undoubtedly, an influence in the pure air, the stillness, the calm freshness of the country, that tends to quell all unkindly feelings, and to foster the gentler affections. Such scenes are fa-

vourable to reflection ; and dispassionate reflection will turn anger into pity, and lend to sorrow itself a patience from which it may extract some portion of sweetness. How inexpressibly refreshing to the mind is the view of the operations of nature, in the vegetable world, after perusing a volume of history ! How delightful to turn from war, treachery, murder, violence, and evil passions of all kinds to the calm wisdom, and beneficent power displayed in the production of the 'humblest weed !' *

Neither are such pursuits necessarily restricted to those more highly-favoured by the gifts of fortune. How many in the humbler walks of life,† while enlarging the sphere of their rational enjoyments, have not only improved their own circumstances, but rendered essential service to their country, by exploring regions the most remote, and returning richly laden with vegetable treasures before unknown. With an apparatus more simple and less expensive than is requisite for the prosecution of other studies, the man of moderate means, and even limited education, may acquire a practical skill in Botany, which will not disappoint any reasonable expectations.

Connected with Horticulture, and yet more especially with Floriculture, Botany assumes a most inviting aspect : and there again the productions of the peasant will often rival those of the peer : for what mind, whether refined or vulgar, in youth or

* Considerations on Botany, by Miss Kent. Mag. Nat. Hist. vol. i. p. 131.

† E. g. Willisel, whose merits are recorded by Ray ; and Caley, recently deceased.

age, can be found, so utterly destitute of taste and discernment; as not to take delight in that which is
 “born in all,”

“——— An ingredient in the compound man,
 Infused at the creation of the kind.”

for,

Flowers, the sole luxury which Nature knew,
 In Eden's pure and guiltless garden grew.

* * * * *

Gay without toil, and lovely without art,
 They spring to cheer the sense and glad the heart.”

BARBAULD.

If such be the pleasures derivable from an innocent recreation, how greatly must they be enhanced when mingled with a yet deeper sense of gratitude, as associated with Agriculture, that most ancient art, inasmuch as the earliest necessity imposed on man was that of tilling the ground for sustenance. So may it be deemed the very parent of useful exertion; for

“Although no part of mighty Nature be
 More stored with beauty, power, and mystery,
 Yet, to encourage human industry,
 God has so order'd, that no other part
 “Such space and such dominion leaves for Art.”

COWLEY.

In fact, the vegetable creation, which covers the earth as with a carpet, is not only the chief ornament and support of the globe we inhabit, from its renovating influence on the atmosphere, and the subsistence it affords, but as the basis of navigation and commerce, giving an irresistible impulse to ingenuity and invention of every kind.

It will be readily ascertained, by any one taking the trouble to look into the Pharmacopœia, that nearly two-thirds of the formulæ are derived from plants; and no small number of that large proportion from those of British growth. And yet, in what innumerable instances,

The wholesome herb neglected dies,
Though with the pure exhilarating soul
Of nutriment and health, and vital powers,
————— 'tis copious bless'd."

Greatly is it to be regretted that so little should be understood of a large majority of our native productions. Circumscribed as is our knowledge, by due encouragement of cultivation, doubtless, several expensive articles of importation might be equally well supplied at home.

• In the arts and manufacturing processes, some of our commonest weeds have unquestionably been too long neglected by the weaver, and not a few merit further attention from the dyer; in dietetics, useful culinary vegetables invite the horticulturist; while for sanatory herbs, so far from adopting any general or consistent course of trial, we are but too well satisfied to derive instruction from illiterate barbarians abroad, or our great-great-grandfathers at home.

Whatever authentic information on these topics our present scanty means have enabled us to supply, will be found incorporated in the Notes.

As yet, notwithstanding that to the few who have thrust in their sickles, the harvest has been far from unproductive; it is but too evident that neither sufficient attention, nor patronage, has been bestowed on.

these objects, which the higher principle of patriotism alone ought to convert to a national advantage.

That excellent Institution, the Society of Arts, must be admitted as an honourable exception to this general apathy; but it is not sufficient merely to reward discoveries; the course of judicious investigation, or of novel experiment, in chemistry, and in culture, should be suggested by the skilful.

Botany has, however, long been deemed one of those collateral studies which add grace to the medical professor. Indeed the physicians of the earlier ages relied chiefly on their discrimination of herbs, and skill in applying them, for whatever relief they were enabled to afford.

At this period of improved education, it is scarcely to be supposed that any one intending to practise the healing art, will subject himself to a suspicion of ignorance in so essential a requisite. Neither is an adequate knowledge of vegetable toxicology to be dispensed with. These qualifications are now, indeed, deemed so essential, as to be, to a certain degree, enforced by legislative authority.

The knowledge of plants in the remote ages of antiquity, important as it was wont to be considered, compared with later acquisitions, was insignificant. It is but in modern times that Botany has assumed the dignity of a science, and that by the aid of an approved systematic arrangement. Thus reduced, as it were, to rule and order, it has advanced more rapidly than any other branch of natural history, and is deservedly become the most popular.

It may not be uninteresting briefly to trace a faint

outline of this encouraging progress. As in other sciences, so the earliest vestiges of this may be recognised among that refined people, who, while surrounding nations were sunk in utter barbarism, retained and cherished, as the sacred fire, the rudiments of all knowledge. Though for a long period in Greece, the Asclepiades, or priests of Esculapius, the physicians of their time, were the sole depositories of such learning; about three centuries before the Christian era, Theophrastus, the disciple of Plato and Aristotle, promulgated an account of about five hundred plants,* chiefly officinal. Contemporaneous was Hippocrates, himself divine, his writings esteemed oracular, but only treating of plants secondarily. Dioscorides, of Anagorba, flourished some centuries later, under Nero, and in his treatise on the *Materia Medica*† enumerated about six hundred species, still limited to those imagined to possess sanative virtues. This may account for the paucity of numbers, to those who rather regard such catalogues as general. These pristine labours of the learned ancients have ever, and deservedly, been held in veneration;—have conferred immortality on their authors, and continue to constitute the only genuine records of those remote ages on these subjects.

Had not Druidical Botany obtained a name, it were scarcely worth while to allude to what must be deemed little better than total ignorance. In Britain the knowledge of these seers, (blinded as they were by the grossest idolatry,) probably extended little beyond

the superstitious usage of the Oak, the Misseltoe, and the Vervain; for what intellectual light could be expected, even among a priesthood whose hands were ever imbrued in sacrifices more bloody than those of Moloch!

Among the Romans, immediately preceding the dawn of the Christian era, the thirty-seven books of Pliny the Elder* deservedly entitle him to the appellation of Prince of Naturalists. His errors, glaring, and all but surprising as they may now appear, were only those of the period in which he lived; while the extent and variety of his information, far transcends that of his most enlightened contemporaries. His fifteen books, more immediately devoted to plants, (though founded on the Grecian remains,) comprehend nearly double the preceding number. Some few other writers might be mentioned, but of comparative insignificance.

It does not appear that, collectively, the two most refined nations of the world were specifically acquainted with more than fourteen hundred plants, either foreign or domestic; notwithstanding that they traversed so large a portion of the most productive regions of the earth.

These luminaries were succeeded by the long-extended chaos of what have been emphatically termed the darker ages; occasioned by the irruption of the

* Born at Verona, distinguished both in civil and military offices, under Vespasian and Titus. An anxious desire to observe, by a nearer approach, the phenomena of the eruption of Vesuvius, in the year 79, proved fatal to him. Vide the Epistle of his nephew, Pliny the Younger, to Tacitus.

Goths over the entire Western Empire.. Learning and science, all but extinguished, about the eighth century transiently shone forth in Arabia, (whose sages, Serapion, Razis, and Avicenna, are supposed to have made known about four hundred new plants;) or languished in monasteries, in a condition little better than dormant, till near the epoch of the Reformation.

With the revival of letters in the sixteenth century, Botany was restored to Europe, and diffused by the translation of different works into Latin, the general language of the learned.

Meanwhile our native herbarists had made little or no advancement; but rather relapsed into comparative ignorance; for (temp. Hen. viii.) about 1516, what was dignified with the title of the "Grete Herbal," altogether contained only four hundred vegetables, of which one hundred and fifty were considered indigenous!

In 1532 the German, Hieronymus Bouc, (Tragus,) in his History described eight hundred species. Cæsalpinus, of Arezzo, laboured with some success about the same period. During the following year was established at Padua, the Botanic Garden, which still exists, an interesting monument of the judicious measures then first adopted for attaining accuracy in this science.

Though the more civilized states of Europe were soon able to boast their native naturalists, the efforts were individual, and subject to no systematic order; though some suggestions tending thereto, (from the parts of the flower and fruit,) were thrown out

by the eminent and laborious Conrad Gesner, in 1560.

Twenty years afterwards, the Physician, Andrew Cæsalpinus, Professor at Padua, was the first among the moderns to hint the possibility of sexual analogy between plants and animals; though the fruit continued to form the basis of his arrangement. Some few isolated facts tending to this discovery had been noted in the most remote ages, (as particularly exemplified in the Date Palm, and the Fig-tree;) but though recorded by Herodotus, Theophrastus, Dioscorides, and Pliny, no deductions had been made to render them illustrative of what has since been satisfactorily proved. Indeed, it has been affirmed that these ancient philosophers were ignorant of the very characters which really constitute the difference between what is called a male and female plant among the moderns, actually reversing the uses of the respective organs! Neither at this time, nor for long after, were the suggestions pursued to conviction.

The name of Aldrovandus, Professor at Bologna, ought not to be here passed in silence: for, though a portion only of his grand work was devoted to Botany, his researches were so extensive as to have entitled him to be considered a second Pliny.

The knowledge of plants continued, nevertheless, to make some progress, though not established on any very stable foundation. In England, the most considerable production of those days was the folio of Gerard,* a native of Nantwich, educated as

* Herbal, or General History of Plants; 1597.

a surgeon, but who, settling in London, became addicted to the study and cultivation of plants, under the patronage of the Chancellor Burleigh. Gerard's garden contained nearly eleven hundred sorts. His work, founded as it is on that of Dodonæus,* a learned Fleming; illustrated by the identical wood-cuts which had been used for the Dutch Herbal of Tabernæmontanus; and in 1663 enlarged and amended by Johnson,† acquired a high reputation, and precedence as a popular book for more than a century.

In 1650 appeared the first attempt in this country, to separate indigenous from exotic Botany, when Dr. How, of London, published his small, though valuable volume,‡ enumerating, in alphabetical order, upwards of twelve hundred native species, chiefly phenogamic. Local Floras have since prevailed to a great extent, and with increasing utility.

About the same period the brothers Bauhin,§ of Basil, laboured to a like purpose. The Pinax, though the work of nearly the whole life of Caspar, comprehended only six thousand plants of all countries.

Botany as yet, however, made but little regular advance, either in England or on the Continent. Dr. Merret's publication,|| originating in the *Phytologia*

* *Stirpium Historiæ Tentades Sex*. Fol. 1683.

† Thomas Johnson, of Selby; bred an apothecary in London; obtained the rank of Lieut. Colonel in the Royal Army, and, eventually, his death wound at the siege of Basing, in 1644.

‡ *Phytologia Britannica; Natales exhibens indigenarum Stirpium sponte emergentium*.

§ *Pinax Theatri Botanici*, 1623. *Hist. Plant. Universalis*, Johanne Bauhin, 1650.

|| *Pinax Rerum Naturalium Britannicarum*, 1667. By Chris-

of How, and still arranged alphabetically, does indeed include not less than fourteen hundred species professedly British; but the accurate and philosophic Ray, only three years afterwards, in his "Catalogue," reduced this number to one thousand and fifty.

Nearly a century after the time of Cæsalpinus, Dr. Robert Morison of Aberdeen* combined his principles with those of Gesner, and is thought not very materially to have improved upon them, notwithstanding he included the habit as well as the fruit of plants.

Though it must be admitted that Cæsalpinus laid the foundation stone, upon which Ray and Morison raised the elementary superstructure of Systematic Botany, and thus facilitated the reference of new species to genera already formed, and restrained that licence before taken of bestowing a new generic appellation upon each novel discovery; the combinations and distinctions essential to system were scarcely yet understood. Indeed natural affinities continuing to be the chief object of attainment, rather embarrassed than promoted convenient arrangement.

The great Ray† himself, notwithstanding his topher Merrett, (of Winchcombe); B. A. afterwards M. D. and settled in London.

* Expatriated as a Royalist soldier: afterwards Professor at Oxford. Only the Herbaceous Division, nine out of fifteen Classes of his great work, "Plant. Hist. Universalis Oxoniensis," was ever published. Fol. 1680.

† John Ray, son of Wray, a blacksmith, of Black Notley, Essex, born 1628; M. A. Trin. Col. Cambridge; F. R. S. and scarcely less to be admired as a divine, than a naturalist: died at the place of his nativity, 1703.

comprehensive mind ranged through the vast field of nature, collecting information on every subject, failed to effect the requisite improvement in permanent systematic arrangement. His method was chiefly founded upon that of Morison, with too much reliance on the fruit. The principal botanical works of Ray were however, that General History, comprising in the whole upwards of eighteen thousand species and varieties, and justly designated by the most learned as the “*Opus immensi laboris* ;” * and the minor one more particularly appertaining to British Botany, † which “led to a nicer discrimination of both genera and species, diffused the knowledge of system, and became the pocket companion of every English Botanist.” A second edition appeared in 1696, with various Cryptogamic additions, altogether containing sixteen hundred species. Thus is it apparent that in little more than twenty years, the indefatigable researches of this eminent and amiable man, contributed not less than five hundred new subjects to our native Flora.

It has been correctly observed that, hitherto all Botanists had been intent upon investigating the order of nature, rather than of facilitating the arrangement of vegetables; therefore their methods were intricate and perplexed, and their writings, however interesting to the recondite, could afford but little instruction to the inexperienced.

* *Historia Plantarum Generalis*. Fol. 1688, et seq., 2 vols. comprising six thousand nine hundred plants; with a large Supplement.

† *Synopsis Methodica Stirpium Britannicarum*, 8vo. 1690.

From 1690 to 1711, Rivinus,* Professor at Leipsic, made some ingenious efforts to extricate the science from the trammels of those primary divisions, which had descended even from Aristotle. Relinquishing the pursuit of natural affinities, and convinced of the insufficiency of characteristics drawn only from the fruit, he attached himself, perhaps too exclusively, to the flower. As respects the adoption of System, this essay has, however, been considered as the ushering in of a golden age in Botany.

The celebrated French traveller and naturalist, M. de Tournefort,† revived the separation of plants into herbs and trees, which had been exploded by Rivinus; and also placing a principal reliance on the flowers, founded a system on the regularity and figure of the petals, the situation of the receptacle, &c. These Elements‡ were favourably received throughout France, and the South of Europe; but the time was fast approaching when more enlightened views were to attract universal attention; when the principles of the “*Fructistæ*” and “*Corollistæ*” were to be equally superseded by the complete development of the hypothesis of a subsisting analogy in the propagation of plants and animals.

Sir Thomas Millington, Savilian Professor of Botany at Oxford, though he has left no written

* *Ordines Plantarum*. Lipsiæ. Fol. 1690, 1696.

† Joseph Pitton de Tournefort, born at Aix, in Provence, 1656: travelled into Greece and Asia under the auspices of Louis XV: died 1748, from injury in his chest by the crush of a carriage.

‡ *Elementa Botanica*. 1694.

testimony, has the credit of having first conceived the idea of the universality of this wonderful analogy; and communicated the same to Dr. Grew,* who appears to have thrown additional light on this obscure subject, in a "Lecture on the Anatomy of Flowers" laid before the Royal Society in 1676. These two distinguished Englishmen would seem almost simultaneously to have arrived at the same conclusion, and thus to have accelerated, if not actually anticipated, the grand discovery.

To the new doctrines Ray gave a cautious assent. Subsequently Dr. Blair, in his Botanical Essays, Bradley, Fairchild, and Miller, announced their cordial concurrence. Camerarius,† in 1695, became an early advocate, and by his experiments greatly promoted their stability. • Vaillant‡ also warmly espoused them; while Tournefort excited an influential opposition.

Though it is gratifying to contemplate the very prominent position of our countrymen in illiciting the truth of this great question, it was reserved for a foreigner, and he native of a comparatively obscure Northern state, fully to substantiate the preconceived opinions, and to render them so far applicable to practical utility, as, in 1732, to promulgate at least the out-

* Nehemiah Grew, a physician in considerable practice in London; Secretary to the Royal Society; died suddenly, 1721.

† Rudolph Jacob Camerarius, Professor of Botany at Tubingen. *Epistola de Sexu Plantarum*.

‡ Born at Vigny, 1669; died at Paris, 1722. *Sermo de Structura Florum*. 1718.

line of a System,* whose success soon became unparalleled.†

The vegetable productions of the globe may now be thus distributed: in Europe, about 7,000; Asia, 6,000; Africa, 3,000; America, (N. and S.) 22,000: in the whole perhaps about 40,000 known species, though by some authorities they have been estimated as high as 50,000! In Great Britain alone have been described nearly 3,000, at least one moiety of which must be referred to the Cryptogamic Class, the contents of which were scarcely recognized by the older Botanists.

It will not be denied that this prodigious augmentation is more justly attributable to the promulgation of the Linnean System, (the very *Clavis Botanica*;) than to any other cause, or combination of talent whatever."

Since the first publication of our "Arrangement," in 1776, the contents of successive Editions have

* *Sponsalia Plantarum*, by Linnæus, 1746, in *Amæn. Acad.* vol. i.; also his *Dissertation on the Sexes of Plants*, 1760, which obtained the premium of the Academy of St. Petersburg. His *Genera Plantarum*, which completely unfolded the System, so far as related to Classical and Generic Characters, was not published till 1737, the year after his visit to England; and he immediately proceeded to prepare, as opportunity offered, more accurate definitions of the Species, which were then also first distinguished by trivial names—an admirable improvement on the descriptions, more or less succinct, which alone had hitherto prevailed; and of itself calculated most essentially to facilitate the study of Botany. Vide also Note vol. ii. p. 741.

† For various particulars of Botanists, and the progress of Botany in England, consult "Sketches," by Richard Pulteney, M.D. F.R.S two vols. 8vo. 1790.

increased from 1687 species (including 590 Cryptogamic), to 2786 (of which 1402 are Cryptogamic,*) a proof, we trust, that the exertions to render perfect this Flora of Great Britain have been unremitting. And, in truth, by the continued labours of not a few skilful and industrious men, our country may be said to possess a descriptive catalogue at least, of her vegetable productions, more complete than that of any other.

To those whom we address, whatever be their station in society, we apprehend it cannot but be obvious, that, did Botany possess no recommendation more substantial than that of furnishing amusement to triflers, (as some have ignorantly imagined), it never could have engaged the devoted attention of the most learned and amiable of mankind, in all ages, and in every country.

It is pleasing to observe, (notwithstanding the aspersion of a speculative foreigner, in describing what he had been led to consider the ruling passion of Englishmen),† that the intellectual atmosphere is gradually acquiring a temperature more congenial to general improvement; so that, whether the danger of our becoming the voluntary slaves of filthy lucre

* And exclusively of about 100 Species of Parasitics introduced in the Notes, not estimated in the general enumeration.

† *Fas est ab hoste doceri.* "Such is their industry, stimulated by a love of gain, that their whole life is spun out before they are aware the wheel is turning; and so highly do they value commerce, that it stands in the place of self-knowledge, and an acquaintance with Nature and her immense laboratory." Gall.

be more or less imminent, the surest antidote lies before us. Nor can a countervailing influence to all that is degrading, so effective as that of mental culture, be too highly prized. Happy, therefore, are we to perceive that superficial accomplishments no longer constitute the essence of polite education; but that superior acquirements, even an early initiation into the paths of science, and especially of that which leads to a just conception of the fairest province of creation, are now deemed indispensable.

That the advantages thus readily acquired, even in early youth, will ripen with maturity into unexpected sources of enjoyment, if not of consolation, has been attested, by the happy experience of eloquent writers, to whose sentiments many a kindred heart will freely respond.

In conclusion: should the varied notices interspersed throughout these volumes, descanting as they do "from grave to gay," and incongruous as they may sometimes seem to be; even in a remote degree, tend to direct the faculties of the mind to that train of thinking most conducive to refinement and elevation of sentiment:—in prosperity, to give buoyancy even to the light footsteps of pleasure;—in adversity,

"To soothe the throbbing passions into peace,
And woo lone Quiet in her silent walks;"

to relume that "sun-shine of the breast" which, though occasionally clouded, will oft revive under the benign influence of congenial occupation; to dissipate the gloom from which the most meritorious are not uniformly exempt; to induce the con-

valescent to wander forth in quest of renovated vigour, as

“ He, when young Spring protrudes the bursting gems,
Marks the first bud, and sucks the healthful gale
Into his freshen’d soul ; her genial hours
He full enjoys ; and not a beauty blows,
And not an opening blossom breathes in vain ;”——

then, indeed, our humble endeavours will not prove wholly unprofitable :—neither the “ oyl nor the labor,” will have been expended altogether in vain.

May they, at least, serve to excite others, more successfully to cultivate advantages so worthy of being sought out.

Nor ought we to despair of such results, when we call to remembrance that even the tedium of the cloister has been thus mitigated ; that the victims of a tyrant’s caprice,* or of political expediency,† have hence derived at least alleviation. For though the “ broken cisterns of Nature” are not to be compared with the “ Fountain of Living Waters ;” the objects exhibited in the material world may aid our contemplation of things invisible, and cannot fail to animate our aspirations after that more glorious revelation, as yet seen but through a glass, darkly.

To whatever course in Natural Philosophy our attention be chiefly devoted, how essentially the very end and aim of such studies may be promoted, both as to profit and delight, by being pursued in a *right spirit*, has not always been sufficiently con-

* Anne of Cleves, in the retirement of Chelsea.

† Josephine, in the Gardens of Malmaison.

sidere^d. With such an auxiliary, "the world," as i were, "becomes a temple, and life one continued ac of adoration."

Indifference, it might be imagined, could never attend such investigations; still less an irreverent tone of mind; but, in order to ensure the utmost satisfaction and improvement, the phenomena of nature should ever be viewed in reference to the Great First Cause.

" — The desire which tends to know
The works of God, thereby to glorify
The great Work-master, leads to no excess
That reaches blame; but rather merits praise
The more it seems excess:
For wonderful indeed are all His works."

Wick House. Jan. 1. 1830

PREFACE

TO

THE THIRD EDITION.

ENCOURAGED by the public reception of the former editions, the Author has spared neither labour nor expence, to render this as perfect as his opportunities and abilities would permit. The progress of botanic knowledge is so rapid, and the discoveries so numerous, both at home and abroad, that this may rather be regarded as a new work than as a republication of an old one. On this account, a short enumeration of the more important changes may possibly be expected by the reader.

The Genera are now taken from Schreber's *Genera Plantarum*, published at Frankfort in 1789, and 1791. The structure of each Genus is illustrated by references to such figures as are best calculated to give an idea of it, particularly those in the *Institutions* of Tournefort, the works of Gærtner and the *Cryptogamiæ* of Hedwig. The exceptions and observations at the end of each Genus are also considerably augmented.

The characters of the species have been compared with the third edition of the *Species Plantarum*, and with Gmelin's *Systema Naturæ*, published at

Leipsic in 1791. Many of the Specific Characters, particularly in the more difficult tribes, are entirely new, and many have undergone considerable alterations. The Author has not hesitated in these attempts at improvement, because he is fully convinced that neither the amendment, nor the entire change of these characters can produce confusion in the science, so long as the trivial names remain inviolable.

Many of the additional descriptions taken from foreign Authors have been discarded, to make room for others made by the Author, or his friends, from recent examinations of the plants as they grow in this Island: other descriptions are shortened, especially where the plants are well known, and indubitably distinguished by the specific character.

The references to figures so ably executed by Dr. Stokes for a great part of the second edition, are mostly preserved in this, though not without some changes in the order of excellence, the erasure of a few which were found to be erroneous, and of others which were thought too bad to be quoted. The historical facts relative to the older figures, stating which are copies and which are originals, though perhaps thought curious by some few readers, are excluded; partly because they are foreign to the purpose of this work, and partly to make room for additional references now given to infinitely better figures, in the continuations of Jacquin, Bulliard, Hedwig, Dickson, Retzius, Seguiér, Hoffman, the *Flora Rossica*, the *Flora Danica*, the *Flora Londinensis*, and the Transactions of the Linnean Society;

besides many from other writers before omitted, and from the following books not hitherto noticed, viz. Allioni *Flora Pedemontana*, Hoffman's *Historia Salicis*, Kniphoff's coloured impressions, Smith's and Sowerby's characteristic figures, Stackhouse and Vellely on Marine Plants, and Woodville's *Medical Botany*. Swayne's *Gramina Pascua*, and Dickson's *Fasciculi of Dried Plants*, are also referred to.

The English reader will perceive that considerable changes have been made in the Terms, by a nearer approach to the Linnæan language; but in this point the Author rather willingly follows than presumptuously attempts to lead the public taste; and as the *Explanatory Dictionary of Terms* is much enlarged and improved, he hopes that no person will have cause to regret the change.

The Classes Gynandria, Monoecia, Dioecia, and Polygamia are now incorporated with the other Classes; that is, the plants they contained are distributed, each in its proper Class, according to the number of Stamens. This alteration in the System has not been made without the approbation of Professor Thunberg, the worthy successor of the great Linnæus, and it meets the concurrence of most of the first Botanists of the age.

The reader will find in the present edition, many species added to the British Flora, some of them non-descript: a few have been discarded because confessedly not indigenous, but some doubtful ones are yet retained, upon the principle, that their retention can produce no inconvenience, whilst their omission might be a real defect.

In the Cryptogamia Class, and in some other parts where the Species are very numerous, new arrangements have been attempted, in hopes of facilitating their investigation. The system of Agarics formed for the second edition, has been improved, and considerably augmented; and lastly, to gain more room, the Uses of the different plants, have been thrown into Notes at the foot of the page.

The Author cannot conclude without expressing his gratitude for the very liberal assistance he has experienced, and his hopes of its continuance; conscious that the efforts of any individual would avail but little towards perfecting the Botany of the British Islands.

Besides the list of contributors to the present edition, he begs leave more particularly to mention the respectable names of Mr. Afzelius, Demonstrator of Botany in the University of Upsal, who looked over great part of the Author's collection, and afforded many valuable observations concerning the identity of several Swedish and English species;—the Rev. Samuel Dickenson, who sent several curious observations on the difficult genus, *Agrostis*;—Mr. James Dickson, who furnished many specimens and answered several queries respecting plants of the Cryptogamia Class, in which he so particularly excels;—the Rev. Dr. Goodenough, who, in addition to his masterly elucidation of the genus *Carex*, in the Transactions of the Linnean Society, sent several specimens of the rarer kinds, and ascertained several doubtful species both in that genus, and also in the Fuci;—J. W. Griffith, Esq. whose numerous and

instructive specimens and observations have greatly enriched the catalogue of Mosses and Lichens;—Dr. Hope, whose specimens from his own collection, and from that of his late worthy father, the Professor of Botany at Edinburgh, have much contributed to elucidate the Flora of Scotland;—the Right Hon. Lady Elizabeth Noel, who furnished the first Byssus ever observed in fructification; Dr. Pulteney, whose specimens and remarks assisted in correcting some mistakes respecting some of the plants in the Southern Counties;—Mr. Edward Robson, who has enriched the work with more new species, and several valuable observations on the Plants of the Northern Counties;—the Rev. Richard Relhan, whose indefatigable researches have greatly increased the Catalogue of English plants;—Dr. J. E. Smith, who has ever shown the utmost readiness to answer such inquiries as the Author has been led to make, particularly such as depended upon the inestimable Herbarium, so happily for science, in his possession;—John Stackhouse, Esq. who, with the utmost liberality, contributed by every means in his power to illustrate the Fuci and Confervæ;—the Rev. G. Swayne, whose practical knowledge of the Grasses enabled him to furnish many observations of high importance to Agriculture;—Sir Charles P. Thunberg, who, in the most handsome manner, sent a collection of Swedish plants, which have not a little assisted in clearing up doubts respecting some species insufficiently discriminated by Linnæus;—Thomas J. Woodward, Esq. the fruits of whose accurate and unceasing researches need not be particularly men-

tioned; they are conspicuous in almost every page of the work.

It would be easy to add the names of several other persons whose friendship and assistance would appear highly honourable to the Author; but some he is restrained from mentioning, and others will be found in the following List, and also affixed to their respective communications.

*A List of the Names of those who have favoured the
Third Edition with their Assistance.*

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AN EASY
INTRODUCTION
TO THE
STUDY OF BOTANY.*

‘ The most enlarged and mature intellect may derive very sensible pleasure from observing the ingenuity by which a multifarious assemblage of objects are arranged in a most intelligible and lucid order; perhaps the finest example of the utility of method in science that the world has seen.” Brit. Bot. obs. on Linn. Syst.

Of the Parts of a Flower.

TAKING it for granted, that no person can be at a loss to distinguish a Vegetable at first sight, from an Animal, or a Fossil,† and that all

* (From the Greek word *Boráon*, signifying an herb: whence the designation of a science which teaches the structure, habits, and properties of plants; the parent both of agriculture and horticulture. E.)

† (To produce a succinct, and yet comprehensive, definition of the three Kingdoms of Nature has not been found so practicable as on a transient view might be imagined. More accurate observation and increasing knowledge have rendered obsolete the ingenious attempts of Linnaeus himself; but in the particular department which we would here elucidate, it may suffice to note that, as both animals and vegetables are organized living bodies, in the lower orders of which the peculiar characteristics of each kind of life become problematical, if not absolutely indeterminable, as in corallines, polypi, and other zoophytes, a practical test by burning has been suggested, the odour of animal and vegetable substances thus becoming readily distinguishable.

Neither should the suggestion of Boerhaave, “*the want of an internal stomach*,” be neglected; animals being nourished by their internal, and plants by their external surface. E.)

of producing Flowers and Fruit,* we shall immediately enter into a description of the parts composing a Flower; for as the Linnean System of Botany is chiefly founded upon the number, shape, situation, and proportion of these parts, an accurate knowledge and discrimination of them is necessary to understanding the Elements of the Science.

A FLOWER consists of the { CALYX (or *Empalement.*)
BLOSSOM (or *Corolla.*)
STAMENS (or *Chives.*)
PISTILS (or *Pointals.*)
SEED-VESSEL (or *Pericarpium.*)
SEEDS (or *Semina.*)

To these may be added, the NECTARY (or *Honey-cup*) and the RECEPTACLE (or *Receptaculum.*)

Some flowers possess all these different parts, whilst others are deficient in some of them; but either STAMENS or PISTILS, or both, are to be found in every perfect flower.

The CALYX is formed of one, or more, green, or yellowish green leaves, placed at a small distance from, or close to, the blossom.

The different kinds of CALYX are (1) a CUP, or *Perianthium*; (2) an INVOLUCRUM, or *Fence*; (3) a CATKIN, or *Amentum*; (4) a SHEATH, or *Spatha*; (5) a HUSK, or *Gluma*; (6) a VEIL, or *Calyptra*; (7) a CURTAIN, or *Volva*; but the most common is the CUP. For an explanation of these, see the Dictionary of Terms; or look at a Rose, and the green covering which incloses and supports the blossom, is called the CUP. Pl. 3. fig. 1. (a. a. a. a.) The Cup of a Polyanthus is represented in pl. 3. fig. 10.

The BLOSSOM is that beautifully coloured part of a flower, which attracts the attention of every one. It is composed of one or more Petals, or Blossom-leaves. If it be in one piece, as in the Polyanthus or Auricula, it is said to be a blossom of *one Petal*; but, if it be composed of several parts, it is accordingly said to be a blossom of *one, two, three, &c.* or *many* parts or *Petals*. Thus the blossom of the Tulip is formed of *six* Petals; and the Garden Roses bear blossoms composed of *many* Petals.

The STAMENS are slender thread-like substances, generally placed within the Blossom, and surrounding the Pistils. A Stamen is composed of *two* parts, the Filament (or *Thread*), and the Anther; but the Anther is the essential part.

The PISTILS are to be found in the centre of the flower; they are

* By Fruit is here meant perfect Seeds, whether accompanied, or not, by an eatable part.

composed of *three* parts, the Germen (or *Seed-bud*), the Style (or *Shaft*), and the Summit (or *Stigma*;) but the Style is often wanting. Some flowers have only one Pistil; others have two, three, four, &c. and some have more than can be easily counted.

The SEED-VESSEL. In the newly-opened flower, this part was called the *Germen*; but when it enlarges, and approaches to maturity, it is called the Seed-vessel. Some flowers have no Seed-vessels; in which case, the seeds are said to be *naked*; the Cup, however, generally incloses and retains the seeds until they ripen; and in the Tribe of Grasses, this office is frequently performed by what was before called the Blossom.

SEEDS are sufficiently well known; the substance to which they are affixed within the seed-vessel is called the *Receptacle* of the Seeds.

NECTARIES are those parts of a flower which are destined to contain or prepare a honey-like liquor. The tube of the blossom serves the purpose of a Nectary in many flowers, as in the Honey-suckle: but in other flowers there is a peculiar organization created for this purpose. See pl. 5. fig. 1, 2, 3, 4.—It must be acknowledged, that the term Nectary is frequently given to parts which do not appear to contain, or to secrete any honey-like liquor; but until the uses of these parts be better ascertained, and the economy of vegetable life more fully understood, an attempt to limit the use of the term, and to create new ones, would be premature.

The RECEPTACLE is the Scat or Base to which the above-mentioned parts of a flower are fixed. Thus, if you take a flower and pull off the Calyx, the Blossom, the Stamens, and the Pistils, and the Seeds, or Seed-vessels, the remaining part at the top of the stalk is the Receptacle. In many flowers the Receptacle is not a very striking part, but in others it is large and remarkable: thus in the Artichoke, after we have taken away the leaves of the Calyx, the blossoms, and the bristly substances, the part remaining, and so much esteemed as food, is the Receptacle.

Having thus briefly mentioned the different parts which enter into the composition of Flowers, let us, for illustration, examine some well-known instance. Suppose it be a flower of the FRITILLARIA IMPERIALIS, or

CROWN IMPERIAL.

CALYX None.

BLOSSOM Six Petals. (Pl. 3, fig. 2. a. a. a. a. a. a.)

STAMENS Six. (Pl. 3, fig. 2. b. b. bc. bc. bc. bc. bc.) *Filaments*

• six; shaped like an awl. (Pl. 3, fig. 2. b. b. b. b. b. b.)

Anthers oblong; four cornered. (Pl. 3, fig. 2. c. c. c. c. c. c.)

PISTIL

.. Single.

• *Germen* oblong: three-cornered. (Pl. 3, fig. 2. d.)*Style* longer than the *Stamens*. (Pl. 3, fig. 2. e.)*Summit* with three divisions. (Pl. 3, fig. 2. f.)**SEED-VESSEL.** An oblong capsule, with three cells and three valves.

Pl. 3, fig. 4, represents the Seed-vessel cut across to show the three cells in which the seeds are contained.

SEEDS..... Numerous; flat.

By considering this description, with attention, and comparing it with the flower itself, and likewise with the engraved figures, we shall soon attain a good idea of the different parts of a flower. If a Crown Imperial be not at hand, a Tulip or a Lily will nearly correspond with the above description. But if we examine the Crown Imperial, we shall find at the base of each Petal, a cavity or hollow, filled with a sweet liquor; this is the Nectary. In pl. 3, fig. 3, is a representation of one of the Petals separated from the rest, to show the Nectary at (k) and one of the Stamens (h. i.)

It is natural to ask the uses of these different parts—A full reply to such a question would lead to a long disquisition, curious in itself, but quite improper in this place.* Let it, therefore, suffice to observe, that the production of perfect Seed is the obvious use of the flower; that for this purpose the Germen, the Summit, and the Anthers, are all that are essentially necessary; and perhaps the Summit might be dispensed with. The fine dust, or Pollen,† contained in the Anthers, is thrown upon the Summit of the Pistil. The Summit is moist, and the moisture acting upon the particles of the Pollen, occasions them to explode, and discharge a very subtle vapour. This vapour passing through the minute tubes of the Pistil, arrives at the Embryo Seeds in the Germen, and

* (For all practical purposes, as an "Introduction," the accurate outline here presented will be found more conducive to the clear comprehension of the student, than an elaborate treatise; nevertheless, as since the original composition various physiological facts have been elucidated, and some of them tending to the subversion of more ancient hypotheses, whatever could be considered as repugnant to later received opinions, has been either modified or omitted; while the principal novel discoveries have been incorporated under the respective heads in the "Dictionary of Terms," by which arrangement it is expected that part of the work, (a portion with which the young Botanist cannot become too familiar,) will be rendered more attractive. E.)

† (To these delicate operations insects contribute their aid; especially bees, while collecting their honied stores, inadvertently,

" ——— Transport the fertilizing meal
From flower to flower——
Then act in nature's office, bring to pass
The glad espousals, and ensure the crop." E.)

fertilizes them. The seeds of many plants have been observed to become, to all appearance, perfect, without this communication; but these seeds are incapable of vegetation. In pl. 3, fig. 5, a *f.* one of the Anthers is represented discharging its Pollen: and in fig. 8, may be seen a particle of Pollen greatly magnified and throwing out its vapours. The Calyx and the Petal seem primarily designed as covers to protect the more essential parts; and perhaps it is not too vain an imagination to believe, that a display of beauty was, in some measure, the design of the Creator.

Independent, however, of these uses, the Botanist takes advantage of the different number, figure, size, and situation of these parts, and assumes them as the foundation of a systematic arrangement. He divides all the vegetable productions upon the surface of the globe into Classes, Orders, Genera, Species, and Varieties. The Classes are composed of Orders; the Orders are composed of Genera; the Genera of Species; and the Species admit of Varieties.

Classification explained.

We are accustomed to consider the productions of Nature as forming three grand divisions, called the Animal, the Vegetable, and the Fossil or Mineral KINGDOM.

Therefore, taking the matter up in this familiar language, let us endeavour to attain an idea of Classes, Orders, &c. by continuing this allusion. Let us compare

The VEGETABLE KINGDOM to the KINGDOM OF ENGLAND;

.... CLASSES..... to the COUNTIES;

.... ORDERS..... to the HUNDREDS;

.... GENERA to the PARISHES;

.... SPECIES..... to the VILLAGES;

.... VARIETIES to the HOUSES.

Some have aptly enough compared

A CLASS.... to an ARMY;

An ORDER.... to a REGIMENT;

A GENUS to a COMPANY;

And, a SPECIES to a SOLDIER.

But no comparison can be more in point, than that which considers the Vegetables upon the face of the globe, as analogous to the inhabitants; thus,

VEGETABLES resemble the INHABITANTS in general;

CLASSES.... resemble the NATIONS;

ORDERS.... resemble the TRIBES;

GENERA .. resemble the FAMILIES;

SPECIES.... resemble the INDIVIDUALS;

- And VARIETIES are the same *Individuals* in different circumstances.

All the Vegetables in Great Britain are divisible, according to the System of Linnaeus, into twenty-four Classes. These have, of late, been reduced to twenty, as will be more particularly noticed hereafter.

The characters of the CLASSES are taken either from the *number*, the *length*, the *connexion*, or the *situation* of the STAMENS; but those founded upon the difference of *situation*, are now given up; the Genera and Species formerly so arranged, being dispersed through the other Classes, according to the number of their Stamens.

The characters of the ORDERS are most frequently taken from the *number* of the PISTILS; but sometimes from some other circumstances, either of the Stamens or Pistils, as will be noticed in the proper place.

The *essential* characters or marks of the GENERA, are taken from some particulars in the flower, before unnoticed; but generic descriptions are designed to contain an account of *all* the most obvious appearances in every part of the flower.

The SPECIES are mostly characterised from peculiarities in the STEM or LEAVES; sometimes from parts of the FLOWER; rarely from the ROOTS.

Varieties.—Both leaves and flowers are subject to variations; some of them evidently dependent upon soil and situation; but others owing to causes hitherto unascertained. Thus the leaves of the Ranunculus aquatilis, or Water Crowfoot, growing beneath the surface of the water, are much more divided than those which grow above the surface; so that a person unacquainted with this circumstance, would hardly believe they belonged to the same plant. Again; the leaves of the Polygonum amphibium, or Amphibious Snakeweed, in wet situations, are smooth; but, in dry and warm situations, rough. Some authors, therefore, have reckoned them as distinct species; but, let them change situations, and the appearances will be changed likewise. But why the leaves of Mint are sometimes curled, those of Holly or Mezereon variegated with white, &c. is more difficult to determine; seeing that slips from these plants, though transplanted into different soils, do not lose their peculiarities: but young ones raised from seeds return to their original form. It is evident, therefore, that these, however different in appearance, are not to be considered distinct species, but only varieties.

No variations are more common than those of colour; but desirable as these changes are to the Florist, they have little weight with the Botanist, who considers them as variable accidental circumstances, and, therefore, by no means admissible in the discrimination of species. It must, however, be allowed, that in some plants the colours of the flowers are not liable to variation, and that they often afford the readiest marks of distinction; on which account they are generally mentioned in the course of this work.

THE STUDY OF BOTANY.

Many flowers, under the influence of garden culture, become double; but double flowers are monsters, (however beautiful; incomplete and yet redundant, exhibiting a deficiency of certain parts and an exuberance in others; and, therefore, can only rank in a System of Botany as varieties. These metamorphoses seem to be effected by too much succulent nourishment, converting the stamens into petals; and in other instances by the plant increasing excessively by root. E.) Hence it is, that the flowers with many Stamens are more apt to become double, and to a greater degree, than those which have few; as appears in the Anemone, the Ranunculus, the Poppy, and the Rose. Where the Petals are so much multiplied as to exclude all the Stamens, the flowers necessarily become barren.

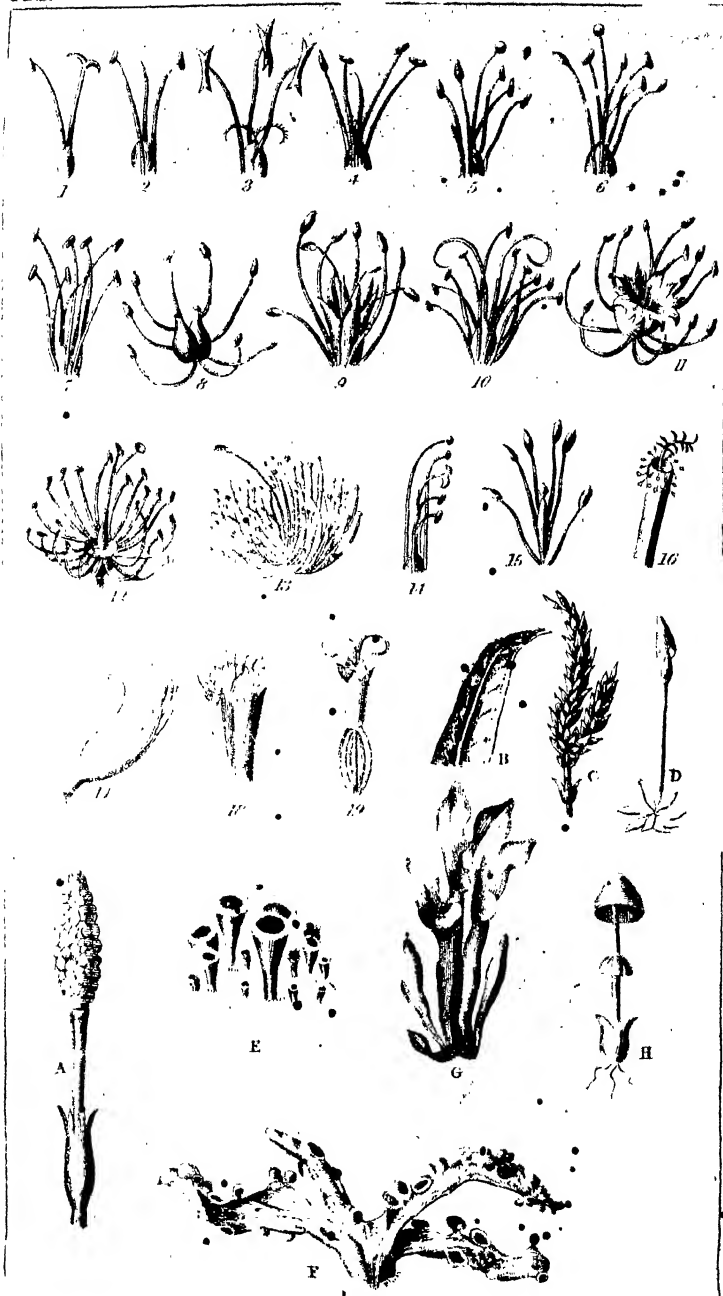
Of Classes, Orders, and Genera.

OF CLASSES.

By looking over the following Table of the Classes; by referring to plate 1; and sometimes by having recourse to the plants mentioned as examples, the learner will soon commit the names and characters of the Classes to memory, so that upon the first sight of a flower, it will be no difficult matter for him to refer it to its proper Class. The examples are adduced by their English names, as being more obvious to the young English Botanist, who will readily find the corresponding Linnæan names, by turning to the General Index, at the end of the third volume. In a few instances, these examples, to illustrate the Classes, are taken from foreign Genera; and, therefore, are not to be found in the Index; but they are plants very generally known, and may be seen in almost every garden. The names of these are printed in *Italic*.

TABLE OF THE CLASSES.

Class.	Pl. 1. fig.	Examples.
1. Monandria (1 Stamen, in each flower)	1. (a)	Mares-tail. Parleypiert.
2. Diandria (2 Stamens, in each flower)	2.	Privet. Sage.
3. Triandria (3 Stamens, in each flower)	3. (a. a. a.)	Yellow Flag. Sadfida. The Grasses.
4. Tetrandria (4 Stamens, in each flower) all of the same length	4.	Plantain. Teasel. Scabious.
5. Pentandria (5 Stamens, in each flower) the Anthers not united	5.	Honeysuckle. Primrose. Borage.
6. Hexandria (6 Stamens, in each flower) the Anthers not united	6.	Snowdrop. Sparagus. Daffodil.
7. Heptandria (7 Stamens, in each flower)	7.	Horse Chestnut.
8. Octandria (8 Stamens, in each flower)	8.	Mezereon. Heath. Willowherb.
9. Eneandria (9 Stamens, in each flower)	9.	Bay-Tree. Flowering Rush.
10. Decandria (10 Stamens, in each flower) the Filaments not united	10.	Campion. Pink. Sedum. Arbutus.
11. Dodecandria (12 Stamens, in each flower)	11.	Houzeleek.
12. Icosandria (Stamens more than 12, fixed to the Calyx or Petals)	12.	Hawthorn. Plum. Pear. Rose.
13. Polyandria (Stamens 20 to 1000, fixed to the Calyx or Petals)	13.	Poppy. Crowfoot. Larkspur. Anemone.
14. Didynamia (Stamens 4, 2 long and 2 short)	14. a. a. c. c.	Ground Ivy. Foxglove. Toadflax.
15. Tetradynamia (Stamens 6, 4 long and 2 short)	15. a. a. a. a. b. b.	Cabbage. Wallflower. Ladysmock.
16. Monadelphina (All the Filaments united)	16. c. c. c.	Mallow. Geranium.
17. Diadelphina (Filaments united in 1 or 2 sets) Blossom Butterfly-shaped	17. a. b.	Pea. Gorse or Furze. Broom.
18. Polyadelphina (Filaments united in 3 or more sets)	18.	Orange. St. John's Wort.
19. Syngenesia (3 Stamens, the Anthers united) Filaments Compound	19.	Coltsfoot. Dandelion. Thistle. Sunflower.
(Gynandria. Monocia. Utricia. Polygamia. The Plants of these Classes are now incorporated with the preceding, according to the number of their Stamens.)		
20. Cryptogamia Flowers inconspicuous. See the Introduction to that Class: also pl. 1. fig. A. B. C. D. E. F. G. H. Examples: Fern. Moss, Liverwort, Sea-woods. Mushrooms.		



THE STUDY OF BOTANY.

OF ORDERS.

A knowledge of the Orders will very readily be attained, by observing, that

In the Class *DIDYNAMIA*, they depend upon the Seeds having a Seed-vessel, or not.

..... *TETRADYNAMIA*, upon the shape of the Seed-vessel.

..... *SYNGENESIA*, upon the structure of the Florets. (See the Introduction to that Class.)

..... *CRYPTOGAMIA*, upon the natural assemblages of plants resembling one another.

And that in all the other Classes, not particularly specified, the Orders depend upon the *number* of the Pistils only. In determining the number of Pistils, count the Styles, as they appear at their bottom part, or base; but if the Summits be not supported upon Styles, then count the Summits.

OF GENERA.

Before we can understand the Character of a Genus, we must again consider the different parts which enter into the structure of flowers, and learn how these different parts may be modified. As for instance,

{ CUP (*Perianthium*) fixed near to the flower; as in the Rose, the Cowslip, or the Fox-glove.

INVOLUCRUM, remote from the flower; generally belonging to the Rundle-bearing, or Umbelliferous plants; as Hemlock, or Carrot. When it surrounds the base of the Umbel, it is called the *general* Involucrum; but when it surrounds the base of the Umbellule, or little Umbel, it is called the *partial* Involucrum, or Involucellum.

The CALYX
may be either a {

CATKIN, (*Amentum*) as in Willow, or Hazel.

SMEATH, (*Spatha*) as in Snowdrop or Daffodil.

HUSK, (*Gluma*) as in Wheat, Oats, or other different kinds of Grasses.

VEIL, (*Calyptra*) covering the fructification of some of the Mosses, and resembling an extinguisher.

CURTAIN, (*Volva*) surrounding the Stems, and attached to the Pileus, of many of the Fungi.

For a further explanation of these terms, and for references to the plates, examine the Dictionary of Botanical Terms, placed at the close of this introductory part.

The FLOSBOM { of one PETAL, as the Foxglove or Primrose; of many
may be either { PETALS, as the Rose or Anemone; but in many flowers
the PETALS are altogether wanting.

INTRODUCTION TO

For a more full explanation of the modification of Petals and Blossoms, see the Dictionary, and likewise plate 4.

The STAMENS and PISTILS have been sufficiently explained before; but it is necessary here to remark, according to the Linnæan System, which, from its being founded upon the distinction of the sexes of plants, is also called the Sexual System, that the Stamens are considered as the male, and the Pistils the female parts; so that flowers containing only the former, are sometimes called male flowers, and such as have only the latter, are called female flowers; but as the greater part of flowers contain both Stamens and Pistils, they are of course called Hermaphrodites.

- [a CAPSULE, (*Capsula*) membranaceous, opening variously; as in Poppy, Convolvulus, Pimpernel.
- a POD, (*Siliqua*) membranaceous, of two valves, the Seeds fixed to each seam; as in Wall-flower, and Honesty.
- a LEGUMEN, membranaceous, of two valves, the Seeds fixed to one seam only; as in Pea and Broom.
- an AIR-BAG, (*Folliculus*) membranaceous, distended, of one valve, opening by a seam at one side, not embracing the Seed; as in Periwinkle.
- a BERRY, (*Bacca*) pulpy, without valves; the Seeds separate; as in Gooseberry, Currant, and Elder.
- a DRUPA, pulpy, and without valves, inclosing a hard nut, or stone; as the Cherry, or the Peach.
- a POMUM, fleshy or pulpy, covering a capsule containing the Seed; as in the Pear, or Apple.
- [a CONE, (*Strobilus*) tiled; as in Fir, or Pine.

These Terms will be found more fully explained in the Dictionary, and illustrated in plate 5.

A RECEPTACLE, (*Receptaculum*) is either peculiar to one flower, as in the Rose, Lily, and Polyanthus; or common to many flowers, as in the Dandelion, Hawkweed, and Artichoke. (See the Dictionary.)

- [a SPIKE, (*Spica*.)
- a PANICLE, (*Panicula*.)
- a CORYMBUS, (or Broad-topped spike.)
- [a BUNCH, (*Racemus*.)
- an UMBEL, (*Umbella*.)
- a TUFT, (*Cyma*.)
- a WHIRL, (*Verticillus*.)
- [CATKIN, (*Amentum*.)

Each of these terms may be found in the Dictionary, where they are explained by familiar examples, and by references to the plates.

For a proper understanding of COMPOUND FLOWERS, the reader is likewise referred to the Dictionary, and to the explanation of the fourth plate.

The student having now, it is supposed, attained tolerably precise ideas of the constitution of Classes and Orders, and likewise of the parts upon which the Generic Characters are founded; we shall select a few instances of well known plants, and, after investigating them systematically, we shall hardly be at a loss to ascertain others which we do not know.

Rules for Investigation.

• *First.* When a plant offers itself to our inspection, the first thing to be determined is the Class to which it belongs. This is to be done by examining the number of the Stamens, and referring to the preceding Table of the CLASSES. Should there be a difficulty in ascertaining the number of the Stamens, on account of the number appearing different in different flowers, though belonging to the same plant, it is advisable to examine one or more of the flowers which are yet unopened; for the Anthers are in that state more distinct, and we may be certain that none of them have been lost. Having fixed upon the Class which we believe to be right, let us turn to the Introduction to that Class, in this volume, and if the perusal of this give us no reason to alter our opinion, we are nearly certain of being so far right. It is best not to trust to the examination of one flower only; for we shall sometimes find the number of the Stamens to be really different, in different flowers upon the same plant; but in that case the classic character must be taken from the *terminating* flower.

• *Second.* Having thus determined the Class, we must next refer to the beginning of that Class in the second or third volume, where we shall find the Synopsis of the Genera contained in that Class. Here also we must look of how many ORDERS the Class consists; and after observing the circumstances by which the Orders are distinguished, we must compare these with the plant before us. If the Order we refer it to has any subdivisions, we shall soon perceive under which of the subdivisions we should expect to find the Genus.

• *Third.* After comparing the Flowers with the Characters of the different GENERA contained in the Order, or in the particular subdivision of the Order, we shall readily see with which of them it best corresponds. We now turn back to the description of that Genus in this volume, and if the description agree with our specimen in all the leading characters, we conclude that we are now certain of the Genus.—Doubtful matters will sometimes arise; but these are for the

most part made clear by observations subjoined to the generic descriptions.

In consulting the generic descriptions, the learner is desired to pay particular attention to the structure of the Pistil, and especially to that of its Germen, when it begins to ripen into a Seed-vessel; because these parts being most essential to the continuation of the species, are less liable to variation than others less important.

Fourth. If none of the Generic Characters at the beginning of the Class agree with the Flower, we must then look at the end of the Order, or subdivision of the Order, to which we had referred it, and see what plants are there mentioned and included between crotchets. If we have not found the plant before, it must be some one of these; therefore looking for these in the Index to this volume, and comparing the generic description with the specimen in hand, we shall not only discover the Genus, but likewise the circumstance which occasioned our perplexity.

The young Students are desired to practise the investigation of *Genera only*, for a considerable time, before they attempt to ascertain a Species; and when by this mean they have attained an accurate knowledge of Classes and Orders; also of the parts composing a flower, and its subsequent state of fruit, or fructification, and likewise of the terms employed in describing them, they may next proceed to determine the *Species*.

OF SPECIES.

Fifth. Either in the second, third, or fourth volume, we shall find the Name, and the Essential Character of the Genus, followed by the several British Species which belong to it. Whenever the Species are numerous, they are subdivided. Consider, then, with which of these subdivisions it agrees; and having determined that point, compare it with the several SPECIFIC Characters. Your plant will probably agree with some one of these.

If you still are in doubt, guided by the references to figures which follow the Specific character, turn to such as you possess; and, to be yet more certain, compare your plant with the descriptions which follow the references to figures; for these will remove many an existing doubt, and obviate many a possible mistake.

If the plant in question be any remarkable *Variety*, you will probably find it introduced after the additional descriptions mentioned above.

Sixth. Make it an invariable rule, not to pass over a single term, the precise meaning of which you do not thoroughly understand, without consulting the Dictionary. Thus will you very soon be able to investigate without consulting it at all.

Seventh. When you gather plants for examination, collect a consider-

able number of the Flowers, and if possible, some just opening, others fully expanded, and others with the Seed-vessels almost ripe ; take care also to have at least one Specimen of the plant, perfect and entire.

It was thought necessary to give a variety of examples for investigation. 1. Because only some of them are to be found at any one season. 2. Because plants common in one Country are not equally so in all. 3. Because the Student is not supposed previously to be acquainted with many plants, and such as he does know are probably only a few of the more frequent kind. 4. He is not desired to examine and compare *all* the examples : perhaps it will be better he should sometimes try his skill, by examining unknown Flowers which he may pick up in his walks.

Explanatory Examples.

EXAMPLE I.

LIGUSTRUM. (Privet.)

The Privet is a Shrub common in hedges and shrubberies in many parts of England. It generally blossoms in June, and its blossoms are white. Let us suppose a Branch of it before us : that we are ignorant what plant it is ; and are required to investigate it. We look into several of the Flowers, and observe two Stamens in each. This circumstance informs us it belongs to the Class Diandria. Turning to the beginning of that Class in the second volume, we find it contains two Orders, and that the Orders depend upon the number of Pistils : therefore looking again at the Flowers, we perceive one Pistil in each ; so that our plant belongs to the Order Monogynia.—We find this order subdivided into eight parts ; and observing what these subdivisions depend upon, see that in our specimen the Blossom is formed of one *regular* Petal fixed beneath the Germen. These circumstances correspond only with the first subdivision, which subdivision contains only one Genus ; so that there can be no doubt but the plant is a Ligustrum. We find too, that the Blossom is cloven into four parts, and that it is succeeded by a berry containing four Seeds. Looking therefore to the Genus Ligustrum, in this volume, we compare it with the generic description, and have the satisfaction to find it agree with that. Being now certain of the Genus ; we look forward to the Species, and as there is only one Species, we soon determine that it must be *Ligustrum vulgare* of Linnæus, or common Privet.

EXAMPLE II.

ARUNDO. (*Reed.*)

Upon the banks of rivers, in wet ditches, and upon the borders of pools, the Reed is sufficiently common. It is a sort of large grass, five or six feet high, and flowers in June.—Having gathered a specimen of this, we proceed to examine it systematically. At first sight we observe that the Flowers grow in panicles, and that each Flower contains three Stamens.—We therefore turn to the beginning of the third Class, and find that Class divided into three Orders, which depend upon the number of the Pistils.* Each of our flowers contains two Pistils which brings us to the Order Digynia. This Order is subdivided into four parts. The first subdivision contains the plants with flowers scattered, or irregularly disposed, *one* only in each calyx. Our plant agrees with the first circumstance, but not with the last, for we find *five* flowers in each Calyx.—The second subdivision contains only two flowers in each Calyx; therefore we pass that over, and come to the third, with scattered flowers, and *several* in each Calyx. Before we proceed further, we just look at the fourth and last subdivision; but finding those *flowers* in form of a Spike on a long and slender Receptacle, we immediately recur to the third subdivision. This subdivision contains six Genera, and we compare the Characters of each with the plant in hand. The want of an Awn, and the woolliness at the base of the blossoms, determines us to call it Arundo. Turning therefore to the Genus Arundo, we compare it accurately with the Generic description, and find it correspond with it. But as the parts constituting the Flowers of Grasses are frequently very minute, we make use of the Botanical Microscope and the Dissecting Instruments, to display them more clearly to the eye;† and likewise take the advantage of comparing them with the figures in the plate of Grasses. Having determined it to be an Arundo or Reed, it remains for us to ascertain the Species. We see that only four species of Arundo are natives of Great Britain; and the circumstances of the five Florets in each calyx, added to the flexibility of the Panicle, which we had observed whilst growing to be waved about with every wind, leave us no room to doubt that it is the Arundo phragmites of Linnæus, or the common Reed.

* N. B. The Student should accustom himself to read over very attentively the Introduction to the Classes, until he be perfectly acquainted with the constitution of each, and the exceptions which are most likely to involve him in difficulties. †

† N. B. The Botanical Microscope and dissecting Instruments are figured in Plate XII. This Microscope is now reduced to a form more convenient for the pocket, and is at the same time made to stand more steadily when in use.

EXAMPLE III.

PLANTAGO. (Plantain.)

The Plantain flowers in June and July. It is very common in mowing grass, and on the sides of roads. It is frequently stuck in the cages of Linnets and Canary Birds, who are fond of the seeds. Upon examining a specimen of this, we find that each flower contains four Stamens, nearly of the same length; therefore we refer it to the fourth Class. We find this Class comprehends four Orders, dependent upon the number of Pistils.—Each of our flowers having only *one* Pistil, belongs to the first order. This Order admits of ten subdivisions. The specimen we have, contains Blossoms of *one* Petal; and this Petal is fixed *beneath* the Germen. From these circumstances we look for it in the third subdivision, and finding, by cutting across the Seed-vessel, that it is divided into two * cells, we conclude that it is a Plantago. We now compare it with the Generic description, and finding it agree, we try to determine the Species. In the second volume are five Species of Plantain, natives of Britain. These Species are not subdivided, therefore we begin with the first; the Plantago major; but the leaves are not egg-shaped; nor are the stalks cylindrical. The Plantago media, which is the second, agrees pretty well; but the leaves are not pubescent, nor is the spike of the Flowers cylindrical. With the third Species it agrees in every particular: therefore we call it Plantago lanceolata of Linnaeus, or Ribwort Plantain.

EXAMPLE IV.

BETULA. (Birch.)

Birch is a tree very generally known. The flowers are disposed in Catkins, which appear in April and May. Some of these Catkins have only Stamens within their Scales, and others, on the same tree, only Pistils. In the former, each floret contains four Stamens, and in the latter two Pistils. These circumstances direct us to the Class Tetrandria, and to the Order Digynia. This Order comprehends four Genera, the second and third of which bear the Male and Female flowers in separate Catkins, as we had before observed to be the case in our plant. An attention to the other parts of the characters induces us

* To judge whether a Capsule consists of one or more Cells, the best method is to cut it through horizontally with a sharp knife, then carefully to pick out the seeds, leaving the dividing membranes entire. If it be very minute, cut off a thin slice horizontally, place it on the stage of the microscope, view it through the magnifier, and at the same time dissect it with the instruments.

to believe it a *Betula*, and a comparison with the Generic description removes every possible doubt. The Species are only three, and the shape of the leaves decides us to call our plant the *Betula alba*, or common Birch Tree.

EXAMPLE V.

LONICERA. (Honey-suckle.)

This plant is common in our hedge-rows, and is very universal known; but let us suppose a person, who never saw it before, struck with the beauty and the fragrance of its blossoms, carrying a piece of it home for examination. Finding five Stamens in each flower, and the Anther not united, he refers it to the fifth Class. The Orders in that Class being determined by the number of Pistils, he knows it belongs to the Order Monogynia, for he observes only one Pistil in each flower. This Order is subdivided into seven parts. The want of the four naked Seeds, and the ROUGH LEAVES, immediately determine him to reject the first subdivision. The blossom being fixed beneath the Germen, not corresponding with his flower, he rejects the second, and passes on to the third subdivision, where he finds (3) Flowers of one Petal superior; the Seeds in a vessel.

This Flower consists of one Petal, and this Petal is fixed superior to, or above the Germen. This subdivision containing four Genera. he observes the three first have Capsules; but in the last the Seed-vessel is a berry with two Cells; which circumstance, added to the inequality of the Blossom, and the knob at the top of the Pistil, induces him to believe it to be a *Lonicera*. He looks for the Generic description, and comparing the flower with that, is confirmed in his opinion. Under this Genus he finds only two Species; he compares it with the Specific Character of each, and readily determines it to be the *Lonicera periclymenum*, or Wood-bine Honey-suckle. A still more attentive examination will now convince him of the propriety of the remark subjoined to the Generic description.

EXAMPLE VI.

DAUCUS. (Carrot.)

We select this as an example of the *Umbelliferous* or *RUNDLE-bearing* plants. (See the Introduction to the fifth Class.)

The five Stamens with Anthers not united, and the two Pistils, evident in each Floret, determine us to look for it in the Order Digynia, of the fifth Class. This Order admits of four subdivisions. (1.) Flowers incomplete. The Genera here do not at all accord with our plant; *Xanthium* has the Male and Female flowers separate; *Ulmus* bears a dry, berry, and a Calyx of one leaf; *Humulus* has the flowers Male and

Female on different plants; and the other five Genera have only one seed in each flower.—2. *Flowers of one Petal; beneath.* But our plant has five Petals; therefore we go to the third *Flowers of five Petals; beneath.* The florets in hand have five Petals: but the Petals are not placed *beneath* the Germen. This subdivision contains only a reference to the Staphylea; therefore we proceed to the fourth *Flowers of five Petals; mostly of two Seeds.* UMBELLIFEROUS. All these circumstances agreeing with the plant before us, we must look for it here; but observing that this subdivision of the Order is farther divided into plants that have the Involucrum *both general and partial*; into plants with the Involucrum *only partial*; and into plants *without any Involucrum*; we examine the specimen, and find an Involucrum to each Umbel or Rundle, and likewise an Involucellum to each Umbellule, or Rundlet. The unequal size of the Petals, the winged Involucrum, and the prickly Seeds, agreeing with *Daucus*, we turn to that Genus. Finding our plant agree with the Generic description, we readily ascertain it to be the *Daucus Carota*, or Wild Carrot.

EXAMPLE VII.

• GALANTHUS (Snow-drop.)

The Snow-drop, though not frequent in a wild state, is to be found in almost every garden, and is among the earliest of our Spring flowers. When we look at it attentively, the first circumstance which strikes us is the want of a Calyx, but instead of that we find upon the fruit-stalk, a sheathing substance, by which the blossom is protected in its infant state. The six Stamens direct us to the Hexandria Class, and the single Pistil to the first Order of that Class. The order is subdivided into,

- (1.) *Flowers with a Cup and a Blossom.*
- (2.) *Flowers with a Sheath or Husk.*
- (3.) *Flowers naked.*
- (4.) *Flowers without Petals.*

The want of a cup, and the presence of a sheath, teach us to expect it in the second division, which contains four Genera. In *Allium* the blossom is fixed *beneath* the Germen, but in our plant it is above it. In *Narcissus* there is a bell-shaped Nectary and six Petals, but our plant has six Petals only, and no bell-shaped Nectary. The circumstance of three *inner* Petals, shorter and notched at the end, is sufficiently observable in our plant; and clearly distinguishes it from *Leucojum*; so that it can be no other than a *Galanthus*. The Generic

description * agrees with our flower; but there it appears that the three inner and shorter Petals may be considered as a Nectary. As there is but one Species, it must be the *Galanthus nivalis*, or Common Snow-drop.

EXAMPLE VIII.

DAPHNE. (Mezereum.)

In February the Mezereum is in blossom, and, though rarely found wild, is often met with in gardens. Its Stamens being eight in number, we turn to the Class Octandria, and its single Pistil confines our enquiries to the Order Monogynia. This being divided into *complete* and *incomplete* flowers, we conclude that the flower before us belongs to the latter subdivision, because it wants a Calyx. The character of Daphne corresponds with our flower, and there is no other Genus in that subdivision. The examination of the Generic description confirms our determination. We find two British Species, but in that before us, the flowers are sessile, and grow *by threes*; it must therefore be the *Daphne Mezereum*, or Common Mezereum.

EXAMPLE IX.

LYCHNIS. (Cuckoo-flower, or Champion.)

It grows wild in woods and ditch-banks, flowering all summer. After examining several of the flowers, finding ten Stamens in each, and the Filaments not united; observing also no vestige of any Pistil, we begin to suspect that it is one of those plants in which the Stamens and Pistils are contained in *separate* flowers, and upon *distinct* plants. In this state of doubt we go to the place where the plant was gathered, and, after examining several, at length find that the Flowers containing Stamens, and the Flowers containing Pistils, do grow upon *distinct* plants. Directed by the number of Stamens, we therefore turn to the Decandria Class, and finding the Orders of that Class founded upon the number of Pistils, we look for it in the Order Pentagynia, five Pistils being the number we count in the Female Flowers. This Order contains seven Genera, the first three of which have five-celled Capsules; but in the Female Flower before us, the Germen cut across, or the capsule; if we happen to have gathered a ripe one, appears to have only one cell.—*Cerastium* and *Spergula* are mentioned to have a five-leaved Calyx, whilst the flowers before us have a Calyx of one leaf.—They must there-

* N. B. Until a little familiarized with the disposition of the System, the learner is desired to consult the Index at the end of the first volume, to find the Generic descriptions; and the General Index at the end of the third volume to find the Species.

fore be referred either to *Agrostemma*, or to *Lychnis*. But the difference between these two Genera is not very obvious in the artificial Characters now before us; we therefore turn to the Generic descriptions of *Agrostemma* and *Lychnis*; compare all the parts of the flower carefully with both these, and have reason to believe it a *Lychnis*. The Obs. subjoined to that Genus support this conclusion, and amongst the species of *Lychnis* we find the *Lychnis dioica*, with Stamens and Pistils on different plants.

EXAMPLE X.

PYRUS. (Pear.)

Finding about twenty Stamens in each flower, we conclude that it belongs either to the twelfth or thirteenth Class.

The Introduction to the twelfth, or Icosandria Class, informs us that the number of Stamens alone, will not sufficiently distinguish it from the Classes Dodecandria and Polyandria; we therefore attend to the directions there delivered, and finding in our Plant that the Calyx is formed of a single concave Leaf; that the Petals are fixed to the sides of the Calyx; and that the Stamens do not stand upon the Receptacle; we conclude that we have the right Class: and seeing each Flower furnished with five pistils, we look for the Genus under the Order Pentagynia. The Order contains three Genera. In the last Genus the Calyx is fixed *beneath* the Germen; but in our Plant it is *above* the Germen. In that and in other respects, it corresponds with the two first Genera. The Calyx being cloven into five parts, and the Blossom being composed of five Petals, are circumstances common to both. But the fruit of the first is a Berry, containing five seeds, and the fruit of the second is a Pomum, or Apple, with five cells, and many seeds. Hence it appears that our plant is undoubtedly a *Pyrus*: and turning to the Generic description, we are confirmed in this opinion. We next compare it with the only two British Species, and are soon enabled to determine whether we have the *Pyrus communis*, or the *Pyrus malus*, i. e. the Pear or the Apple.

EXAMPLE XI.

RANUNCULUS. (Crowfoot.)

The beautiful shining yellow Blossoms of Crowfoot, and the frequency of it in pastures in the months of June and July, will probably attract our notice; especially as cattle leave it untouched, even when the pasture is bare. We therefore collect some of it; and finding a great number of Stamens in each Blossom, we refer it to the Polyandria Class. The introduction to this Class tells us that the Stamens stand

upon the Receptacle, and not upon the Cup or Blossom. As this appears to be the case, we next examine the Pistils, and finding them more than can readily be counted, we refer to the Order Polygynia. This Order includes eleven Genera. Of these only *Sagittaria*, *Ranunculus*, and *Adonis*, have a Cup to the Flower. The first eight that occur have no Calyx; but our Flower has a Cup of five Leaves. It is clear then, that it must be one of these three. *Sagittaria* it cannot be, because there the Flowers are Male and Female on the same plant, but those before us are all Hermaphrodites. Upon an accurate examination, we observe a little Pore or Nectary, within the claw of each Petal, and governed also by the number of Leaves forming the Cup, and of Petals composing the Blossom, we turn to the Generic description of *Ranunculus*. Quite satisfied about the Genus, we observe the Species are numerous, and arranged according as the Leaves are *divided* or *not divided*. In our specimen the Leaves are divided. We then compare it with each of the Species, and, from its open or expanded Calyx, its cylindrical Fruit-stalks, its Leaves with three divisions, many clefts, &c. determine it to be the *Ranunculus acris* or Upright Crowfoot.

EXAMPLE XII.

ARUM. (Cuckoo-pint, or Wake-robin.)

Not unfrequent in stiff soils. It generally grows in rough shady places, and at hedge bottoms. It flowers in May.

There is something so very peculiar and unusual in the structure of this plant, that we find ourselves at a loss how to set about the investigation of it. What shall we call this long purplish substance which stands upright within the sheathing conical Calyx? We remove the Sheath to inspect the lower part, and there we observe this purple substance surrounded at its base by a number of Germens. It must therefore be a sort of Fruit-stalk, or a Receptacle of an unusual length. On a further examination we see a number of hair-like fibres, or threads, but without any Anthers, and between these and the Germens, we perceive a number of Anthers without any Filaments.

As the Anthers are numerous, we turn to the Class Polyandria, and the Germens being more than six, we look in the Order Polygynia. *Zostera* and *Arum* are the only Genera in which the existence of a Blossom is not mentioned; and as our Plant shows nothing like a Blossom, it must be one or other of these. The conical Sheath of one Leaf, and indeed all the other circumstances mentioned, assure us that it is an *Arum*. The Generic description, and the subjoined observations, fully explain the structure of this wonderful and extraordinary plant.

The shape of the leaves accords with the Specific Character, and we pronounce it to be the *Arum maculatum*.

EXAMPLE XIII.

LAMIUM. (Archangel, or Deadnettle.)

It grows every where upon ditch-banks, amongst rubbish, and in orchards.

Upon opening the blossom we observe four Stamens, and as two of the Stamens are considerably longer than the other two, we expect to find it in the Class Didynamia. After reading the introduction to that Class, we have no doubt of having classed it right. We then observe that the two Orders in this Class are characterised from the seeds being *naked*, (*Gymnospermia*;) or *covered*, (*Angiospermia*.) In our specimen we find four *naked* Seeds at the bottom of the cup; so that it belongs to the first order. This Order admits of two subdivisions, founded upon the clefts of the cup: our plant arranging under cups with five clefts, we carefully compare it with each of the Generic characters; and after some difficulty, guided by the bristle-shaped tooth on each side the mouth of the Blossom, we suspect it may be a *Lanium*; though we are not certain but it may be a *Galeopsis*. We therefore compare our plant with the Generic descriptions of both; and further, aided by the Essential Generic characters at the head of the Species, we find it is a *Lanium*. Upon reading the characters of the three British Species, we are soon determined by the taper-pointed, heart-shaped Leaves, &c. to call it the *Lanium album*, or White Archangel.

EXAMPLE XIV.

CHEIRANTHUS. (Wall-flower.)

This plant is very generally known. It grows wild upon old walls, and is frequently cultivated in gardens.

Carefully remove the Calyx and the Petals, and you will find six Stamens; two of which are shorter than the other four. It belongs therefore to the Class Tetradynamia. The Orders of this Class depend upon the form of the Seed-vessel; and, after examining the specimens, you necessarily refer it to the first subdivision of the second Order; for the Seed-vessel is a *long* Pod, and the leaves of the cup stand upright and close to the Blossom. It may be necessary to dissect several Flowers before you can ascertain the Genus; for this Class, like the preceding, is composed of a natural assemblage of plants, whose flowers bear a strong resemblance to each other, and the differences, when this is the case, are not very obvious. At length, however, the small glandular

substance on each side the base of the Germen, determines you to refer it to *Cheiranthus*. Upon a comparison with the Generic description, you find it accurately described; and the shape of the leaves, &c. put it beyond a doubt that it is the *Cheiranthus Cheifi*, or Wall July-flower. (*Cheiranthus fruticulosus*. E.)

EXAMPLE XV.

ALTHÆA. (Marsh-mallow.)

It naturally grows in salt marshes; but for its medical uses, it is cultivated in most gardens, and is generally known.

Upon examining the flower, we find the Stamens numerous, and the filaments all united at the base. We recollect that this circumstance characterises the flowers of the Class Monadelphia. We find the Orders in that class depend upon the number of Stamens; and observing that the flowers before us contain more than ten, we must expect to find the plant in the ORDER Polyandria. Our plant having many Pistils, we refer it to the third subdivision. The three Genera contained in that subdivision nearly resemble each other; but the outer cup being cloven into nine parts, we *must* suppose it an *Althæa*. Under that Genus we find only one Species, and as our plant agrees both in the Generic and Specific character, we pronounce it to be the *Althæa officinalis*, or Marsh-mallow.

EXAMPLE XVI.

SPARTIUM. (Broom.)

From the appearance of the Stamens, which are all united by the Filaments, we should be at a loss, whether to expect this plant in the Monadelphia, or in the Diadelphia Class; but the butterfly-shape of the Blossom determines us to the latter. After reading the introduction to that Class, we observe that the Orders depend upon the number of Stamens. The flowers of our plant contain ten; and, as the Filaments are *all united*, we are at no loss to see that it belongs to the first subdivision of the Order Decandria. We now compare it with the characters of the different Genera; but, as the Genera of this Class are a natural assemblage, and from their similarity, admit of one *general NATURAL CHARACTER*, the differences between each Genus *must* depend upon minute circumstances, and therefore demand peculiar attention. At length we perceive, from the hairy Summit, and the Filaments closely investing the Germen, that it must be the *Spartium*. Comparing it therefore with the Generic description of *Spartium*, and still further confirmed by the Essential Character, we find it is the *Spartium scoparium*,

or Common Broom; which happens to be the only English Species belonging to that Genus.

EXAMPLE XVII.

LEONTODON. (Dandelion.)

This plant is in Blossom during great part of the spring and summer; it grows in pastures, road sides, and the uncultivated parts of gardens. At the first view we perceive its structure to be very different from any we have examined before; we hardly know what to call Stamens, or what Pistils. The fact is this: it is a true COMPOUND FLOWER, or a flower formed of a number of little flowers (or florets,) sessile upon one common Receptacle, and inclosed by one common Calyx. Turning to COMPOUND FLOWERS and FLORETS in the Dictionary, and reading the explanation of Compound Flowers with references to the fourth plate, we soon attain a true idea of the matter; and therefore separating one of the Florets, and examining it carefully, we find five Stamens with the Anthers united; and the Pistil passing through the cylinder formed by the union of the Anthers. We therefore refer it to the Class Syngenesia. By carefully studying the introduction to that Class, we understand still more clearly the nature of Compound Flowers, and the Florets which compose them. We learn too, how the Orders are constituted; and, upon examining the Flower before us, and finding that all the Florets are furnished with Stamens and Pistils, we perceive that it belongs to the first Order. From the shape of the Blossoms of the Florets, which are all long and narrow, we know that we must look in the first subdivision of that Order. Perceiving that the Receptacle is an important circumstance in the character of Compound Flowers, we pull off all the Florets of one of the Flowers, and expose the Receptacle to view. We find it naked; that is, not beset with chaffy or bristly substances. We find too, a sort of down adhering to the Seeds; * and observe the scales of the Calyx laid one over another like the tiles on a roof, the outer scales loose, flexible, and turned back. These characters corresponding with Leontodon, we fix upon that as the Genus. We look forward to the Generic description for further information; with this it perfectly agrees; and in the OBSERVATIONS subjoined, we are told that

* The Down attached to the Seeds in Compound Flowers is either formed of simple hairs, or of hairs set with other finer hairs; in the former case, it is said to be hair-like; in the latter it is said to be feathered. Now as these circumstances must be attended to, in forming Generic Distinctions, it is necessary to apprise the learner, that the Down must be exposed to the air a little time before he can pronounce whether it be hair-like, or feathered; for whilst it is moist in the flower, the lateral hairs often lie so close as not to be visible.

in the *Leontodon Taraxacum* the Down of the Seed is supported on a long pedicle, which we had already remarked in the flower before us. We now read the characters of the different species; and, from the deep notches in the leaves, judge our plant to be the *Leontodon Taraxacum*, or Common Dandelion.

It will be very proper for the learner thus to examine several more Genera of this Class, as the Coltsfoot, the Burdock, the Thistle, the Tansy, the Daisy, and the Groundsel; for thus will he soon overcome the difficulties which present themselves; and when any of the books are at hand which are mentioned in *Italic print*, after the Specific Character, it will be satisfactory to turn to them, and to compare the plant in question with the figures referred to.

It may not be amiss for him to begin with a Sunflower, which, though not an English plant, and therefore not to be found in this book, may yet, from the large size of the Florets, enable him to form a good idea of the structure of Compound Flowers in general.

By paying a proper attention to the nature of Compound Flowers, we soon learn to distinguish them from double Flowers; and when by accident or cultivation any of the true Compound Flowers become double, we shall always find such state to depend on the multiplication of some of the parts, and the exclusion of others.

These examples will, it is supposed, afford sufficient instruction to the learner; but, if he wish for others, he may examine such plants as are mentioned in the Table of the Classes.

It still remains to say something of the *Cryptogamia* Class. The plants in that Class are not arranged like the other parts of the system, and therefore cannot be investigated in the same manner. We can only recommend a careful perusal of the Introduction to the Class, and an intimate acquaintance with the terms. This being done, the industry of the student cannot fail of its proper reward.

After conducting my Pupils, in this familiar manner, through the different parts of the System, I must suppose that they no longer stand in need of my assistance, and that they will soon find themselves able to investigate every British plant which may come before them. But this is not all: they will find in the Study of Nature a truly delightful recreation; that Botany, in particular, independent of its immediate use, is as healthful as it is innocent; that it beguiles the tediousness of the road, furnishes amusement at every footstep of the solitary walk, and, above all, that it leads to pleasing reflections on the bounty, the wisdom, and the power of the great CREATOR.

DIRECTIONS

FOR

DRYING AND PRESERVING

SPECIMENS OF PLANTS.

“ A wreath that cannot fade, of flowers that blow
With most success when all besides decay.”

MANY methods have been devised for the preservation of Plants ; we shall relate only such as have been found most successful.

First prepare a press, which a workman may make by the following directions:—

Take two planks of well-seasoned wood, not liable to warp. (For this purpose none will prove more serviceable than elm. The planks should be two inches thick, eighteen inches long, twelve inches broad. To regulate the degree of pressure screws were formerly used, but wedges have been found preferable, as more manageable and efficacious. Provide, therefore, two wedges of thin well-seasoned wood, to pass through uprights affixed to each end of the lower plank, and rising through the upper one. E.) When a press is not at hand, the specimens may be dried tolerably well between the leaves of a large folio book, laying other books upon it to give the necessary pressure ; but in all cases too much pressure must be avoided.

Secondly, get a few sheets of strong card pasteboard, and half a dozen quires of large, soft, spongy paper : such as the stationers call blossom blotting paper, is the most proper.

The plants you wish to preserve should be gathered in a dry day, after the sun has exhales the dew : taking particular care to collect them in that state wherein their Generic and Specific characters are most conspicuous. Carry them home in a tin box, (*vasculum*), which may be made about nine inches long, four inches and a half wide, and one inch and a half deep. Get the box made of the thinnest tinned iron that can be procured ; and let the lid open upon hinges. The box should be

painted, or lacquered, to prevent its rusting. If any thing happen to prevent the immediate use of the specimens you have collected, they will be kept fresh two or three days in this box, much better than by putting them in water; * but the Blossoms of some plants are so delicate, that they shrivel in a very short time, and often before you can well examine them. In this case, put the stems in water, cover the whole with a glass bell, like those used in gardens, or the receiver of an air-pump will do; expose them to the sun, and in half an hour you will find them completely expanded. When you are about to preserve them, lay them down upon a pasteboard, as much as possible in their natural form; but at the same time, with a particular view to their Generic and Specific characters.—For this purpose it will be advisable to separate one or more of the flowers, and to display them so as to show the Generic character. If the Specific character depend upon the flower, or upon the root, a particular display of that will be likewise necessary. When the plant is thus disposed upon the pasteboard, cover it with eight or ten layers of the blotting paper, and put it into the press. Exert only a small degree of pressure, for the first two or three days; then examine it, unfold any unnatural plaits, rectify mistakes, and, after putting fresh paper over it, drive the wedges a little tighter. In about three days more, separate the plant from the pasteboard, if it be sufficiently firm to allow of a change of place; put it upon a dry fresh pasteboard, and, covering it with fresh blossom paper, let it remain in the press a few days longer. The press should stand in the sunshine, or within the influence of a fire, for nothing is so destructive to the beauty of the Specimens as a long continued dampness. Shrubs and many of the harder perennial plants will lie much neater in the Herbarium, if the bark of the principal Stem be slit up with the point of a sharp knife, so as to allow the inner woody part to be extracted.

When the specimen is perfectly dry, the usual method is to fasten it down with glue, or paste, or gum† water, on the right hand inner page of a sheet of large strong writing paper. It requires some dexterity to glue the plant neatly down, so that none of the gum or paste may appear to defile the paper. Press it gently again for a day or two, with a half sheet of blossom paper between the folds of the writing paper. When it is quite dry, write upon the left hand inner page of the paper, the

* (A very cautious sprinkling with water, especially in a hot and dry state of the atmosphere, will tend to preserve their freshness. Plants may likewise occasionally be revived by stimulants; as igniting the end of the stem, or saturating it in hot water, and after either process plunging it in cold. E.)

† (Adhesive materials are not only unnecessary, but detrimental, as encouraging noxious insects; neither are specimens fastened down, conveniently accessible for examination. E.)

name of the plant ; the specific character ; the place where, and the time when it was found ; and any other remarks you think proper. Upon the back of the same page, near the fold of the paper, write the name of the plant, and then place it in your cabinet. A small quantity of finely powdered arsenic, or corrosive sublimate, is frequently mixed with the paste or gum-water, to prevent the devastations of insects ; but the seeds of Staves-acre finely powdered, will answer the same purpose, without being liable to corrode or to change the colour of the more delicate plants.* A little Alum added to the paste makes it keep longer, and a little very coarse brown Sugar dissolved in the gum-water renders it less brittle when dry. Some Botanists put the dried plants into the sheets of writing-paper without fastening them down at all, which I think much the most useful way : others only fasten them by means of small slips of paper, pasted across the stem or branches, and others again sew them to the paper with a needle and fine thread.

Another more expeditious method is to take the plants out of the press, after the first or second day ; let them remain upon the paste-board ; cover them with five or six leaves of blossom paper, and iron them with a hot smoothing iron, until they are perfectly dry. If the iron be too hot it will change the colours ; but some people, taught by long practice, succeed very happily. This is quite the best method to treat the different species of Orchis and other slimy mucilaginous plants.

I am indebted to T. VELLE, Esq. for the following improved method of drying plants, which, being the result of much experience, cannot but prove acceptable to the practical Botanist :—

—“ I place the plant, when fresh, between several sheets of blotting-paper, and iron it with a large smooth heater, pretty strongly warmed, till all the moisture is dissipated.—The flowers and fructification I fix down with gum, upon the paper on which they are to remain, and iron them in that state, by which means they become almost incorporated into the paper in their proper forms. Many colours I have been able to fix, which frequently forsook the flowers during the gradual and tedious process of sand-heats, and other methods which I had before tried.

* (Sir J. E. Smith observes that the maggots of *Plinus Fur*, and some other of the smaller *Coleoptera*, are always insinuating themselves into collections of dried plants. The acid and bitter plants, the genera of *Euphorbia*, *Centiana*, *Salix*, *Ribes*, *Prunus*, the classes *Syngenesia* and *Tetradynamia*, are peculiarly obnoxious to their attacks. To prevent such depredations, the Doctor washes his specimens with a solution of corrosive sublimate of mercury in spirits of wine, applied, with a camel hair pencil, as lightly as possible. The best proportion is about two drachms to a pint, to which may be added a little camphor. Vid. a Letter addressed to Mr. Konig, in the *Annals of Botany*, v. 2, p. 194. E.)

"Some plants require a more moderate heat than others: experience must determine this: and herein consists the nicety of the experiment. The forms and colours seem to remain more perfect by this mode than by any other I have been able to try."—If the mucilaginous and succulent plants do not succeed so well with respect to their colour, under the hot smoothing iron, I have always found that they failed full as much, or more, when preserved by other means. The colours of the blossoms in the class *Didynamia*, I could never fix by a sand-heat. Several of these, as well as of the rough-leaved plants, I have preserved tolerably well by ironing.

"It is necessary to observe, that in compound flowers, or in those of a solid and more stubborn form, as the *Centaurea*, &c. some little art must be employed in cutting away the under part, by which means the profile and form of the flowers will be more distinctly exhibited, provided they are to be pasted down."—"After all, it must be remembered, that a plant, when preserved in a most perfect state, is a kind of Hygrometer, and if exposed for any time to a moist atmosphere, or laid up in a situation which is not perfectly dry, will imbibe a degree of humidity that must soon prove injurious to the beauty of the specimen."

Major Velley sent me some plants dried by these means, which are the most beautiful specimens I have seen. The facility of drying plants by ironing must render this method particularly acceptable to the travelling Botanist.

In addition to the methods of preparing a *Hortus-siccus* already pointed out, I am desired by my friend Mr. Whately, Surgeon, in London, to insert the following account of a method which he has used with the greatest advantage; and such of my readers as observe his rules, and execute them with adroitness, will find their attentions well rewarded.

An approved Method of Preparing Plants for an Herbarium.

"PREVIOUSLY to the drying of plants by this plan, it will be necessary to procure the following apparatus:

1. "A strong oak box of the size and shape of those used for the packing up of tin plates.

2. "A quantity of fine dry and scarceed sand of any kind, sufficient to fill the box.

3. "A considerable number of pieces of pliant paper, from one to four inches square.

4. "Some small flat leaden weights, and a few small bound books.

"The specimen of any plant intended for the Herbarium, should be

carefully collected when dry and in the height of its flowering, with the different parts as perfect as possible, and in the smaller plants the roots should be taken up. It should then be brought home in a tin box well closed from the air.—The plant should be cleared from the decayed leaves and dirt, and afterwards laid upon the inside of one of the leaves of a sheet of common cap paper. The upper leaves and flowers should then be covered in an expanded state by *pieces of the prepared paper, which may be placed in any irregular way, and kept down by the fingers till these parts of the plant are entirely covered by them: and after that, let one or two of the leaden weights be placed upon the papers. The parts of the plant below should then be covered with the pieces of paper, and likewise with the weights, and thus the whole plant should be laid in its proper expanded form by the same method. The weights should then be carefully removed, and the other leaf of the sheet of paper applied to its opposite one, having the loose pieces of paper and plant between them. After which, one or two of the books should be placed on the outside of the paper, and remain there till as many other plants as are intended to be preserved, have been prepared in like manner.† A layer of sand an inch deep should then be put into the box, and afterwards one of the plants, with the books placed upon it, which last should be removed after a sufficient quantity of sand is put upon the paper, to prevent the plant from varying its form. • All the other plants may then be put into the box in the same manner, with a layer of sand about an inch thick between each, when the sand should be gently pressed down by the foot, and the degree of pressure, in some measure, regulated by the kind of plants in the box. If they are stiff and firm, as the Holly or Furze, much pressure is required. If tender and succulent a lesser degree is better, for fear of extravasating the juices, which would injure the colour of the plant; but particular care should be taken to make a sufficient degree of pressure upon the expanded blossoms of plants, that they may not shrivel in drying. The box should then be carefully placed before a fire, with one side a little raised or occasionally flat, as may be most convenient, alternately changing the sides of the box to the fire, twice or thrice a day; or, when convenient, it may be put into an oven in a gentle heat. In two or three days the plants will be perfectly dry. The sand should then be taken out with a common

* As the beauty of the Specimen depends very much upon this part of the process, each large petal ought to be laid flat separately with a piece of paper, and the utmost care taken that every part of the plant be laid down without folds, which may be done, in general, in a short time.

† Those of the Genus *Potamogeton*, and others of the same kind, ought to be put into the sand without loss of time, and well pressed; otherwise they are apt to dry too fast and shrivel.

plate, and put into a spare box, and the plants carefully taken out also, and removed to a sheet of writing paper.

“This method of preserving plants is, from much experience, found preferable to any other, and has every advantage attending it that can be wished; it dries most of them of an exceedingly fine natural and durable colour, as well in the flowers as leaves. It will be found upon trial, that a different degree of heat is suitable to different plants, the exact knowledge of which will be easily acquired by a little experience, and that some will dry much better than others. I have always found the fewer plants there were in the sand at a time, and the quicker the heat, the better the colours were. Those plants that have coloured flowers should be placed uppermost, otherwise their colours will be injured by the slow dissipation of the moisture from the others.

“Plants are most fit for future examination when preserved loose within the paper, and if they are kept in a very dry room and unexposed to the air, they will preserve their beauty a great number of years; but it will be necessary to inspect them once a year, to destroy any of the small insects that may breed among them, and this will be fully sufficient for their preservation.”

By whatever method the plants are dried, the precautions mentioned in the last paragraph of Mr. Whately's account, are indispensable to their preservation. They may be most conveniently kept in a Cabinet made for the purpose, with the drawers open in front, excepting only a shallow ledge at the bottom of each; placing the species of each Genus together, and keeping each Class separate.

In the Class Cryptogamia, a different management may be adopted with advantage, except in the FILICES (or Ferns) and these may be dried and disposed as the plants of the other Classes; but the MUSCI (Mosses,) which constitute the second order of the Cryptogamia Class, being very numerous, and mostly very minute, may be kept in papers folded to the octavo size. It is sufficient to place them in the papers, and to give them a moderate pressure for a short time. They dry readily and are not apt to spoil.

The preservation of the ALGÆ, or third Order of this Class, requires some further directions.

The LICHENS require no care in drying; they should not even be pressed, or put into papers, but placed in shallow close drawers divided into small partitions.

The CONFERVÆ, and the finer leaved FUCI, cannot be advantageously laid down in the common way, but should be floated in a large shallow dish of water, so as to separate and expand their delicate branches. A stiff piece of writing paper may then be made to slide under them, and with a little address, the paper may be drawn out of the water so as to

bring out the plant upon it, in its beautiful and expanded state. If the whole be then dried between blotting papers, under a gentle pressure, the plants will, in general, adhere to the writing paper so as to preserve their form. The Sea weeds must all be soaked in large quantities of fresh water, so as to extract the salt before they are laid down to dry. If the collector has not time to examine and lay them down while at the sea side, nothing more should be done to them, than allowing them to dry moderately in the open air, and tying them up loosely in strong brown paper. They may thus be carried without injury to any distance; and when macerated in fresh water, will expand as fully as before, so as to admit of their being examined and preserved at leisure.

The Fungi (Fungusses) may be preserved tolerably well by the method described in the second volume of the Transactions of the Linnæan Society, at page 263, to which I might refer the reader; but as a longer continued attention to the subject has given rise to some little improvement of the method, since that Memoir was communicated, I subjoin the following directions:

Take two ounces of vitriol of copper reduced to powder; pour upon it about a tea-cup of cold water, stir them with a piece of stick, or a quill, for about a minute, then pour off the water and throw it away.

On the remaining vitriol pour a pint of boiling water, and when the whole is dissolved and grown cool, add to it half a pint of rectified Spirit of Wine. Filtre it through paper; keep it in a bottle closely corked, and call it the *Pickle*.

To eight pints of pure spring water, add a pint and a half of rectified Spirit of Wine. Keep this in corked bottles, and call it the *stronger* liquor.

To eight pints more water, add one pint of Spirit of Wine, and call it the *weaker* liquor.

Be provided with a number of wide-mouthed glass jars, of various sizes, capable of holding from two ounces to two pints: all very well fitted with corks.

Whatever Fungus, whether Agaric, or Boletus, &c. you wish to preserve, should be suffered to lie upon your table as long as it can be trusted without danger of its decaying, so as to allow some part of its moisture to evaporate; the thick and fleshy plants should lie the longest, but the deliquescent ones, and those which are very thin and delicate, should be put into pickle almost immediately after they are gathered.

Pour some of the *Pickle* into a spare jar, and into this immerge the Specimens to be preserved. They should remain in the pickle from three hours to three days, according to their bulk and fleshiness. Then remove each one into the jar in which it is to be kept, suiting the size of the jars to the size of the Specimens. If they are of the

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large, juicy, and fleshy kind, fill up the jar with the *stronger* liquor, but the *weaker* will suffice for the smaller and thinner plants. Whichever liquor be used, the jar must be quite filled with it, and immediately corked very tight. Cover the cork and the top of the jar with Venice Turpentine, by means of a painter's brush. In three or four days the turpentine will become nearly dry, and then tie a piece of wetted bladder very tight over the top of the jar. These precautions are necessary to prevent the access of air, and the evaporation of the liquor; because, if either of these happen, the specimens will soon be spoiled. The Boleti are in general more difficult to preserve than the Agarics, and such of either as abound with a milky juice, are apt to destroy the transparency of the liquor, which must then be changed. Mosses and Lichens may be preserved in great perfection, by this method of pickling.*

* (Fungi may also be preserved according to a method practised by M. Le Cette, of drying them in an oven or stove of moderate heat, when covered with pure and finely sifted sand. Thus may the texture, form, and, in some degree, even the colour of most mushrooms be rendered permanent. This discovery was made accidentally, and communicated to the "Decade Philosophique" by a naturalist who found mushrooms buried under loose sands, keeping their form; and who has since perpetuated a collection of them by this mean. They likewise afford elegant subjects for modelling in wax; a material in which the delicacy of their structure and beautiful tints have been most successfully represented by Botanists of the present age; nor would such occupation prove less interesting or attractive than other ingenious arts which engage the plastic hands of the British fair. E.)

. DICTIONARY

OF

BOTANICAL TERMS.*

THE following alphabetical list of the Terms employed by Linnæus, as well as those used in this work, and by other modern Authors, will be extremely useful to the learner ; as he will thus be enabled to understand whatever botanical books he may wish to consult.

The ladies too, who, notwithstanding the obstacles attendant upon a dead language, often have recourse to Linnæus in the original Latin, will find their researches facilitated by it.

(Various leading facts connected with the Physiology of Vegetables will now be found incorporated under the several subjects they may tend to illustrate.

“ Botany is not solely the art of bestowing hard names, and so a mere exercise of the memory, but a study of facts and observations, worthy of every rational inquirer into the Economy of Nature.” Brit. Bot.

“ Mark, too, the sap, that ’ere its process ends,
In course alternate rises or descends ;
In active virtue, how its liquid power
Creates the wood, the leaf, the fruit, the flower.” E.)

ABBREVIATUS, see Short.

ABORTIVI (flosculi) abortive. See Barren.

ABRUPT (abruptus) when a winged leaf ends abruptly : i. e. without a tendril or a little leaf. Pl. 8. fig. 53.

(ABRUPTLY (determinate ramosus), branched : when each branch, after terminating in flowers, sends out numerous shoots from near its extremity. Sm. Gram. E.)

ACAU’LIS, stemless.

* N.B. The plants referred to in this Dictionary, for the sake of illustrating the different TERMS, are, for the most part, natives of this island, and are quoted by their most common English names, because the reader who recollects them will immediately, and without further trouble, be able to form the right idea which the term is intended to convey ; and as these names are inserted in the Index, he may easily turn to them. The instances taken from exotic plants, are chiefly such as are cultivated in almost every garden, and are introduced only when an English plant was wanting to which the term could be properly applied, or where it was thought that the exotic was more commonly known, and more easily attainable than the native.

(*ACCUMBENT*, (*accumbens*) when the back of one of the cotyledons is applied to the curved radicle. E.)

ACEROSUS, chaffy: (which see; as applied to leaves. E.)

ACICULARIS, needle-shaped.

ACINOSIFORMIS, scymetar-shaped.

ACINI, granulations.

ACORN, the seed of the *Oak*.

ACOTYLEDONES, seeds without lobes, and of course when they vegetate, they produce no seminal leaves. (This term has been applied to the various tribes of the *Cryptogamia*; though, in some instances, with what degree of correctness, appears rather doubtful. E.)

ACULEATUS, prickly.

ACULEI, prickles.

ACUMINATUM, (fol.) tapering to a point.

ACUTE, (*acutus*) tapering gradually to a slender, but not a prickly or a thorny termination, as the leaves of *Jasmine*, or the segments of the cup of the *Primrose*. See pl. 3. f. 10; or pl. 7. f. 40.

ACUTUS, acute.

ADNATUS, connected.

ADPRESSUS, contiguous, pressed to, or laid to, (as certain leaves to their stem. E.)

ADSCENDENS, ascending.

ÆQUALIS, equal.

(*ÆSTIVATIO*, æstivation, or flower-budding: the way in which the divisions of a blossom are folded in the bud; or valvular, meeting side by side. E.)

AGGREGATE (*aggregatus*) when a number of little flowers or florets, are so disposed as to form one compound flower: all of them either inclosed within one common calyx, or situated upon one common receptacle; so that none of them can be taken away without destroying the uniformity of the whole. Thus, the flowers of *Thrift*, *Parsley*, *Teasel*, *Scabious*, *Daisy*, are aggregate; several small flowers or florets combining to form one large flower.

AIR-BAG, (folliculus) a distended bladder-like seed-vessel, opening on one side, as in *Periwinkle*, or *Bladder-Senna*. It is also used to signify other kinds of distended air-vessels.

ALÆ, wings.

ALAATUS, winged seed, stem, or leaf-stalk.

(*ALBUMEN*, the white, a substance more or less hard, composing the larger portion of some seeds, and intended to nourish the embryo until the root be produced. E.)

ALBURNUM, a soft white substance, found in trees, between the inner bark and the wood. In this state, dealers in timber call it the sap.

ALGÆ, the name of the fifth Order of the Class *Cryptogamia*.

ALTERNATE (*alternus*) branches, or leaves, or flowers, springing out regularly one above another, as the leaves of *Borage*, or *Chequered Daffodil*. Pl. 9. f. 3. (*d. d. d. d. d.*) Pl. 8. f. 54.

ALVEOLATUM, see *Favosum*.

AMEN'TUM, a catkin.

AMPLEXICAULIS, embracing the stem.

(*AMPUL'LA*, a bladder, defined by Mr. Thomson as a small membranaceous bag attached to the roots and immersed leaves of some aquatic plants, rendering them buoyant; on which account he places it among the Props. • It is generally globular, but in *Hooded Milfoil*, it is pear-shaped. It contains a watery fluid, and a small bubble of air. E.)

AN'CEPS, two-edged.

ANDROGY'NA (planta) bearing some flowers with stamens only and some with pistils only, on the same root, without any mixture of such as are hermaphrodite. Of this we have examples in the *Melon* and *Cucumber*.

(*ANGIOCARP'I*, a division of Fungi, according to Persoon, including such as bear their seeds internally. E.)

ANGIOSPER'MIA, seeds in a capsule, as in the second Order of the Class *Didynamia*.

ANGULAR (angulatus) stem, &c. having edges or corners; opposed to cylindrical. A stem or stalk may have one, two, three, four, or more angles or corners. The *White Archangel* has four.

ANGULAR CAPSULE, as in *Flower de Luce* or *Flag*.

ANGUSTIFO'LIUS, narrow-leaved.

ANNUAL, (annuus) living only one year; as the *Larkspur*.

(*ANNULA'TÆ*, annulated; descriptive of the capsules of certain *Ferns*, which are circled with an elastic transverse ring. E.)

AN'NULUS, ring, (attached to certain *Fungi*. E.)

AN'NUUS, annual.

ANOMALOUS, (anomalus) irregular, subject to no certain order.

ANTHER or *Tip* (anthera) a part of a stamen fixed upon the filament, and containing the Pollen. (It is membranous and bursting lengthwise, sometimes opening by terminal pores, rarely by a lid or valve. E.) In *Dog's Mercury* it hath one cell; in *Hellebore* two; in *Orchis* three; in *Fritillary* four; see stamen. Pl. 3. f. 2. (c. c. c. c.) f. 5. (b. b. b. b. b. b.) f. 6, (h.)

AN'THERA, an anther.

APET'ALUS, without a petal.

A'PEX, the point, end, or termination of a leaf, &c.

APHYL'LUS, leafless.

APOPHY'SIS, excrescence.

(*APOTHE'Cium*, see *Receptaculum*. E.)

APPENDAGES, (fulcra) see *Props*.

APPENDICULA'TUS, appended, mostly applied to express an additional small leaf.

APPROACHING, see *Converging*.

APPROXIMA'TUS, near to, or near together.

ARACHNOIDE'US, cobwebbed.

ARBORES'CENS, arborescent, gradually becoming firm and woody.

ARBO'REUS, tree-like; having a permanent woody stem.

ARCUA'TUS, bowed.

ARIL'LUS, a seed-coat, (or tunic. E.)

ARIS'TA, an awn.

ARISTA'TUS, awned.

ARM (*brachium*) see Measure.

ARMA, weapons of defence.

ARROW-SHAPED (*sagittatus*) **LEAF**, shaped like the head of an arrow, as the leaves of *Sorrel*; *Small* or *Great Biddweed*. Pl. 7. f. 13.

———— **ANTHERS**, as in the *Crocus*. *Elder*.

———— **STIPULÆ**, as in the *Pea*.

ARTICULA'TUS, jointed: (as a stem, or root: also a petiole consisting of more than one piece, united by a thicker intermediate portion: common in compound leaves, and in the Grasses. E.)

ARTI'CULUS, a joint.

ASCEN'DENS, or *Adscendens*, ascending.

ASCENDING, (*ascendens*) growing first horizontally, and then bowed upwards, without support. It is applicable either to *Leaves*, to *Stalks*, to *Stems*, as in spiked *Speedwell*, or to *Stamens*, as in all the *Speedwells*. See the *Stamens* next below (a) in pl. 1. f. 8.

(**ASCID'IUM**, a pitcher; a term of Willdenow, signifying a hollow foliaceous appendage resembling a small pitcher; of rare occurrence; sometimes including great numbers of insects, as flies, ants, &c. apparently drowned in the sweetish liquor it contains. E.)

AS'PER, rough.

ASPERIFO'LIA, rough-leaved.

ASSUR'GENS, rising.

ATTENUA'TUS, growing slender.

AUC'TUS, calyx, when the calyx has the addition of another smaller calyx.

AURICULA'TUS, ear-shaped: also having an appendage.

AVE'NIS, without veins.

AWL-SHAPED (*subulatus*) slender, and becoming finer towards the end, like an awl. Pl. 7. f. 8. Pl. 5. f. 15. (a) as the leaves of *Rock Stone-crop*.

———— **FILAMENT**, as in *Borage*, *Crocus*, *Doffdill*, *Hawthorn*.

———— **SEEDS**, as in *Shepherd's Needle*.

(**AWN** (*arista*) the slender sharp appendage or bristle, in some instances spiral and sensibly hygrometrical, growing to the valves of corn or grass, and frequently called a beard. It seems to operate as one of the various modes for the dispersion of seeds. It is remarkable in *Oats* and *Barley*. Also used to signify a sharp point terminating a leaf, &c. Pl. 2. f. 21. (b. b.) f. 23. (b. b.) E.)

AWNED (*aristatus*) having an awn.

AWNLESS (*muticus*) without awns.

AXILLARY (*axillaris*) at the base or bosom of the leaves, or branches, on the upper and inner side.

BAC'CA, a berry.

BACCIF'ERUS, bearing berries.

(**BACILLUM**; see *Pedicle*. E.)

BARBA'TUS, bearded.

BARK (*cortex*) the universal covering of the stems, roots, and branches of vegetables. It is generally spoken of as *inner* and *outer*. (That the blossom is an expansion of the *inner*, and the calyx a continuation of the *outer* bark, was a favourite theory of Linnæus, but later discoveries have exploded this doctrine. F.)

(The Bark (more strictly speaking, according to vegetable physiologists,) formed of reticulated woody fibres, consists of one or more layers beneath the Cellular Integument; the number frequently demonstrating the age of a tree, one being added annually. The innermost is denominated the *liber*, and in that the principal functions are carried on, until it in regular process becomes an outer crust. The virtues of many plants reside in the Bark. E.)

BARREN, masculi; (abortivi) **FLOWERS** or **FLORETS**, such as produce no perfect seeds. The barren flowers are generally such as have Stamens, but no Pistils; these are also called male flowers. Flowers which have only Pistils, are sometimes barren, owing to the absence of other flowers which bear Stamens. In the Umbelliferous flowers (Class V. Order II.) it is not uncommon to have several of the florets barren, though they are furnished both with Stamens and Pistils; perhaps from some imperfection in the Pistils; but this is not clearly ascertained. Pl. 1. f. 21. a. 22. a. 23.

BASE (axilla).

— of the **LEAVES** or **BRANCHES**. Flowers or fruit-stalks are often said to grow at the *base* of the leaves or the branches; that is, when they are placed at the bottom of a leaf, or branch, and on the inner side, where it joins to the stem. In position Axillary. Pl. 9. f. 5. (m.) the fruit-stalks of *Common Pimpernel*; the *Great Periwinkle*, and the *Flowers* of *Common Calamint*, are examples.

BATTLEDORE-SHAPED (spatulatum.) See pl. 8. f. 64.

BEADED (granulatus) consisting of many little knobs connected by small strings. As the root of *White Saxifrage*.

BEAK, or **Bill** (rostrum) a long projecting appendage to some seeds, or seed-vessels, like the beak of a bird; remarkable in the *Geranium*. See pl. 5. f. 15.

BEARDED (barbatus) beset with straight parallel hairs.

BELL-SHAPED (campanulatus) the idea this term is intended to convey cannot well be mistaken; examples of it occur in the *Cup of the Cherry*; in the *Blossoms* of *Convolvulus* or *Lily of the Valley*; and in the *Nectary* of the *Wild Daffodil*. Pl. 5. f. 1. (a) Pl. 4. f. 2. 3. 4. 5.

BENEATH (inferus) a **BLOSSOM** is said to be *beneath*, when it includes the Germen, and is attached to the part immediately below it, as the blossom of *Sage*; *Borage*; *Convolvulus*; *Polygonus*.

— a **GERMEN** is said to be *beneath* when it is placed below the attachment of the blossom, and therefore not included within it; as in *Honey-suckle*; *Currant*; *Hawthorn*.

(**BENT** (cernuus) **FRUIT-STALK**; so much bent that the flower faces the earth, and so stiff that it cannot be straightened without breaking: as in *Crown Imperia* E.)

BENT INWARDS (inflexus) as the leaves, pl. 9. f. 5. (a. a.)

BERRY (bacca) a pulpy seed-vessel without valves; in which the seeds are naked, as in the *Gooseberry* or *Elderberry*. Pl. 5. f. 19.

BICAPSULARIS, having two Capsules.

BICORNIS, two-horned, (bicornate, as certain authors &c. are said to be. E.)

BIENNIAL (biennis) plants or roots; are those which continue alive two years: (as the *Spear Thistle*. E.)

BIFA'RIUS, pointing from opposite sides.

BI'FIDUS, cleft or cloven into two.

BI'FLO'US, two-flowered.

BIGEM'INUM, twin-fork.

BIJU'GUM, in two pairs.

BILABIA'TA, two-lipped, (blossom.)

BILOB'UM, two-lobed, (leaf.)

BILOCULA'RE, two-celled, (seed-vessel.)

BINA'TUS, in pairs.

BIFARTI'TUM, deeply divided into two parts.

BIPINNA'TUM, doubly winged, (leaf.)

BIRD-FOOTED (pedatus) bearing some resemblance to the feet of a land-fowl; as the leaves of *Passion Flower*, or the seed-vessel of *Bird's-foot Trefoil*. Pl. 7. f. 49.

BITERNA'TUS, doubly three-fold.

BITTEN (præmorsus) not tapering to a point, or ending in any even regular form, but appearing as if bitten off; as in the root of *Devil's-bit*; and the petals of *Common Mallows*, and *Marsh-Mallows*. Pl. 7. f. 18.

BILL (rostrum) a long awl-shaped substance attached to a seed, resembling the bill of a Woodcock; as in *Shepherd's Nettle*; or *Crane's-bill*. Pl. 5. f. 15. (a.)

BIVALVE, two-valved, (seed-vessel.)

BLADDERS (vesiculæ) a kind of Air-bags found on some species of *Fucus*. (vid. Ampulla. E.)

BLADDER-SHAPED (inflatus) inflated or distended like a blown bladder; as in the cup of *Bladder Campion*, and the blossoms of *Fignort*.

BLISTERED (bullatus) when the surface of the leaf rises high above the veins, so as to appear like blister.

(**BLOSSOM** (corolla) the inner integument of a flower. It may consist of one or more *Petals*; and also not unfrequently of a *Nectary*. Its function is conjectured to resemble that of the leaves, only applicable to the delicate internal organs which it enfolds. Abounding in air-vessels, it has been considered the lungs of the stamens and pistils; and Sir J. E. Smith concludes that the petals, with the influence of light, must be of primary importance to the secretion of the *pollen*, the honey, and volatile perfume. The doctrine that it originates from the *liber* or inner bark, as the calyx from the outer, is now exploded. Pl. 4. E.) It is sometimes difficult to decide, whether we should call this protecting cover to the Stamens and Pistils, a blossom or a calyx. In most instances the former is coloured, and the latter green; but that is not always the case, for there are green blossoms and coloured cups; but Linnaeus remarks, that the blossom has its Petals, or its Segments placed alternately with the Stamens, whilst the leaves or segments of the cup stand opposite to them. If this rule be adopted, the blossom or Corolla of the Tulip, and several other bulbous rooted plants, must be considered as a Cup or Calyx.

BLUNT (*obtusus*) opposed to *acute*, as the leaves of *Spiked Speedwell*; the cup of *Convallulus*; and the capsule of *Yellow Rattle*. See the leaf, pl. 7. f. 39.

BOAT-SHAPED (*navicularis*) like a little keel-bottomed boat; as are the valves of the seed-vessels of *Woad* and *Mithridate*. Pl. 5. f. 13. and the keel or lower petal of many of the butterfly-shaped blossoms.

BORDER (*lamina*) the upper spreading part of a blossom of one petal; as in *Primrose* and *Auricula*. It is sometimes used to signify the thin membranous part of a seed, or seed-vessel. Pl. 4. f. 1. (b. b.)

BORDERED (*marginatus*) having a border.

BOWED (*arcuatus*) bent like a bow.

—— inwards (*incurvatus*.)

BRACHIA'TUS, see Cross Pairs, (and Four-ranked. E.)

BRA'CHIUM, an arm, see measure.

BRAC'TEA, floral leaf, (generally; and by recent Botanists applied to the Involucellum and Involucrum, improperly deemed the calyx of an umbel. E.)

BRANCHED (*ramosus*) having lateral divisions.

(**BRANCH-LEAF**; (*folium rameum*) described as such only when it differs from the leaves on the main stem of the same plant: as in *Purple Corn-wheat*. Thoms. Lect. E.)

BRISTLES (*setæ*) strong, stiff, cylindrical hairs.

BRISTLE-SHAPED (*setaceus*) slender, and nearly cylindrical, of the size of a bristle, as the straw of the *Least Bullrush*: the leaves and stipulæ of *Asparagus*.

BROAD-TOPPED-SPIKE, see *Corymbus*.

(**BUD** (*gemina*) a protuberance upon the stem or branches, originating from the *alburnum*, generally scaly, and in those of trees more or less gummy or resinous, to assist in protecting the tender parts from cold. It contains the rudiments of the leaves, or flowers, or both, which are to be expanded the following year, and may be considered as their *hybernaculum*. The buds of herbaceous plants, are radical. Bulbs are the buds of a certain tribe of herbs, their scales being no other than subterraneous leaves, as in *Lilium*. Sm. Gram. E.)

(**BULB** (*bulbus*) may be considered as a *Bud* placed upon the root, or subterraneous. It contains the rudiments, or embryo, of a future plant, continuing rather than re-producing, and liable to the hereditary imperfections of the parent. Bulbs are sometimes found upon the stem, as in some species of *Garlic*; or branches, and even mingled with the flowers occasionally. E.)

(**BULB'OSA**, (*radix*) a Bulbous Root. E.)

BULBOUS ROOT (*bulbosus*) is either

SOLID, as in the *Tulip*. Pl. 11. f. 3.

SCALY, as in the *Lily*. Pl. 11. f. 4. or

LAMELLATED or **COATED**, as in the *Onion*. Pl. 11. f. 2.

JOINTED, as in *Adoxa* and *Lathræa*.

BULGING or **GIBBOUS**, (*gibbus*) swollen out, not regularly, but on some one or more sides, as the under part of the blossom of the *Foreglove*,

the blossom of the *Honeysuckle*, the Calyx of *Turnip*, *Cabbage*, and *Wall-flower*. Pl. 4. f. 12. (b.)

BULLA'TUM, blistered (leaf.)

BUNCH (racemus) a fruit-stalk furnished with short lateral branches. The *Grape*, *Currant*, and *Barberry* are instances. P. 6. f. 8.

BUNDLE (fasciculus) when several flowers stand on their respective fruit-stalks, which grow nearly from the same point, and rise to the same height; as in *Sweet William*.

BUNDLED (fasciculatus) **LEAVES**, when they arise nearly from the same point, and are crowded together; as in the *Larch*. Pl. 9. f. 3. (f.)

—— **ROOTS**; a sort of tuberous roots in which the knobs are connected without the intervention of threads, as in the *Pæony*.

BUTTERFLY-SHAPED (papilionaceus) from an imaginary resemblance that some blossoms bear to that insect. The *Pea* and the *Broom* furnish examples. See the Introduction to the Class Diadelphia; and also pl. 4. f. 13. 14. 15. 16. 17.

CADU'CUS, caducous, shedding (as a calyx falling off at the first opening of the flower, as in *Poppy*. E.)

CÆSPITOSUS, matted together.

CALCARATUS, having a spur.

CALICULUS, the seed-coat cover.

CALYCU'LATUS, a double Calyx.

CALYPT'RA, a veil.

(**CALYX**, or **EMPALEMENT**, constitutes the outer integument, and often protects the more tender parts of the flower, but resembles the leaves in texture and colour. Sir J. E. Smith conjectures that the calyx may also contribute to the growth and strength of the stalk which supports it, as the leaves do to that portion of branch below them. E.) It is either

—— a **CUP**, (perianthium) as in the *Primrose*; pl. 3. f. 10.

—— an **INVOLUCRUM** (involucrum) as in *Currot*; pl. 6. f. 9. (c. c.)

—— a **CATKIN** (amentum) as in *Hazel*; pl. 1. f. 1.

—— a **VEIL** (calyptra) as in several *Mosses*; pl. 1. f. D. (a.)

—— a **HUSK** (gluma) as in *Oats*; pl. 2. f. 21. (a. a.) f. 1. (a. a.)

—— a **SHEATH** (spatha) as in *Narcissus*; pl. 3. f. 9. (a. a.) or

—— a **CURTAIN** (volva) as in several *Fungi*. Pl. 1. f. H. (c.). See those terms.

CAMFANULA'TUS, bell-shaped.

CANALICULA'TUM, channeled (leaf) or leaf-stalk.

CANCELLA'TUS, latticed.

CAPILLA'RI, hair-like, (or capillary. E.)

CAPITA'TUS, growing in heads.

CAPITULUM, knob, or little head (of flowers.)

CAPRI'OLUS, see *Cirtus* and *Tendrils*.

CAPSULE (capsula) a dry hollow seed-vessel, (of one or more cells separated by partitions, *dissepimenta*, and having a central column, *columella*. E.) It opens naturally in some determinate manner; as at the side by a small hole in *Orchis* and *Campanula*; horizontally in *Pimpernel*; longways in *Convolvulus*; at the bottom in

Arrowgrass; or at the top, as in most plants. See pl. 5. f. 6. 9.
14.

CARINA, keel.

CARINA'TUS, boat-shaped, or keeled.

CARNO'SUM, fleshy (leaf.)

CARTILAGIN'EUM, gristly (leaf.)

CATKIN (amentum) is a composition of flowers and scales, on a long, slender, thread-shaped receptacle, the figure of the whole resembling a cat's tail. The *Willow*, the *Hazel*, and the *Reed-mace*, are instances. Pl. 6. f. 12. (Each scale is accompanied by one or more stamens, or pistils, rarely both. The pistil bearing catkin only is permanent after flowering as it becomes the fruit. Sm. Gram. E.)

CAUDA, a tail.

CAUDEX, a stem, or trunk; particularly applied to a tree: (also to the body of a root, surmounted by the crown, or corona. E.)

CAULESCENS, having a stem.

(CAULESCENT, root: running up into, and partaking the substance of the stem: as in *Rape*, *Turnip*, &c. E.)

(CAULINA'RE, folium. Stem-leaf. E.)

CAULINUS, belonging to a stem.

CAULIS, a stem; a term of more general signification than either scapus or stipes; which see; (by some authors it is called a stalk, as properly applicable to herbaceous plants only. E.)

CAVIS, hollow.

CELL (loculamentum) having cells (locularis) a vacancy in the capsule for lodging of the seed. Capsules have either one cell, as in *Primrose*; two as in *Thorn-apple*; three as in *Lily*; four as in *Spindle-tree*; five as in *Rue*; six as in *Asarabacca*, &c. Pl. 3. f. 4. When a capsule has several cells with a single seed in each, it is sometimes called *cocca*; thus a two-celled and a two-seeded Capsule is called Capsula dicocca; but its application seems limited to Capsules which have external protuberances corresponding with the internal cells, and these protuberances being so strongly marked, as to give the appearance of so many Capsules united together, rather than one single Capsule. It also signifies the cavity in the Anthers which contains the Pollen.

CENTRAL (flores flosculosi) FLORETS; those which occupy the middle part of a compound flower; as the yellow ones in the middle of a common *Daisy*; pl. 4. 21^o (b.) and it likewise is used to signify the florets in the middle part of an Umbel.

LEAF-STALK is fixed not to the base, but to the middle part of a leaf as in the garden *Nasturtium*, and *Marsh Pennywort*. Pl. 9. f. 4. (a.)

CERNUUS, bent, (fruit-stalk.)

CHAFF (palea) a thin membranous substance growing upon a common receptacle to separate the florets from each other, as in *Teasle*; *Scabious*; *Willow*; *Burdock*.

CHAFFY (acerosus) LEAVES; these are hard, dry, strap-shaped, permanent, surrounded at the base by a kind of membranous chaff.

like substance. The leaves of *Fir*, *Yew*, *Pine*, and *Cedar* are so called. Plate 9. f. 3. (c.)

CHAFFY RECEPTACLE, FLOWER, or HUSK (paleaceus) set with a substance like chaff.

CHANNELED (canaliculatus) **LEAVES, LEAF-STALK,* or FRUIT-STALK;** having a deep furrow or channel extending from the base to the end.

CHIVE, see Stamen.

CICATRISA'TUS, scarred.

CILIA'TUS, fringed (bordered with soft parallel hairs. E.)

CIN'GENS, binding round.

CIRCULAR (circularis) round and flat; nearly in the form of a circle, as are the leaves of *Alder*, or the petals of *Strawberry* and *Haw-thorn*. Pl. 7. f. 2.

CIRCUMCIS'SA, cut round.

CIRCUMFERENCE (circulus) the part of a circle most distant from the centre. Thus in a shilling or half crown, the inscription is round the circumference. It is used in Botany to express the florets that are farthest from the centre of a compound flower; as the white ones which surround the yellow ones in the *Daisy*, or the florets in the outer part of an Umbel. Pl. 4. f. 24. (a. a. a. a.)

CIRRO'SUM (folium) terminating in a tendril.

CIR'RUS, a tendril.

CLAMMY (viscosus) adhesive like bird-lime; as are the leaves of *Alder*; or the stalks of *Fraxinella*; and *Gum Cistus*.

CLASPER, see Tendril.

CLASS (classis) see the Introduction.

CLAU'SUS, closed.

CLAVA'TUS, club-shaped.

CLAVIC'ULA, the same as Cirrus. (Mr. Thomson considers there are two varieties of vegetable claws, or claviculæ; viz. *cirriformis*, the cirral claw, resembling the branched tendril, excepting that each of the branches is terminated by a small fleshy knob; which spreading out in the shape of an oval disk, adheres strongly to a wall or other flat surface; and the *radiciformis*, the radicular claw, a small cylindrical body, resembling a radicle, which is protruded from the stem; as in *Ivy*. E.)

CLAW (unguis) blossoms that are composed of several petals have frequently those petals so formed as to admit of two distinct definitions; the claw and the limb. The claw is the lower part, or that next to the base; thus if you take a *Pink*, a *Campion*, or a *Wall-flower*; and draw out one of the petals, the lower and the slender part by which it was connected, and which was included within the calyx, is the part which is called the Claw. Pl. 4. f. 11. (a. a.)

CLEFT, see Cloven.

CLIMBING (scandens) a term applied to plants which take the advantage of some adjacent body to support and raise themselves; and this effect may be produced either by adhesive fibres, as in *Ivy*; or by spiral tendrils, as in *Bryony*. E.)

CLOATHING (pubes) every species of hairiness on the surface of plants.

See COTTON; HAIR; WOOL; BRISTLES. In a more extended sense, it also includes viscid matter, glands, &c.

CLOSE (conglomeratus) when a branching fruit-stalk bears its flowers closely compacted together, but without regularity.

CLOVEN (fissus) divided half way down, as are the summits of *Ground Ivy* and *Jacob's Ladder*; the petals of *Campion*; and the leaves of *Wormwood*.

———— ANTHERS; see pl. 1. f. 3. (a. a. a.)

CLUB-SHAPED (clavatus) thinner at the base and thicker upwards, as is the long receptacle of *Cuckoopint*, and the fruit-stalk of *African Marigold*.

(CLUSTER (thyrsus) a collection of flowers, a dense or close panicle, somewhat in an ovate form, as those of *Lilac* and *Butterbur*. E.)

COADUNA'TUS, joined together at the base.

COARCTA'TUS, compact, (dense, as some panicles. E.)

COATED (tunicatus) (or lamellatus. E.) root; composed of layers one over another, as in the *Onion*; (or the thin membrane sometimes investing a seed is also called a tunic. E.)

COBWEBBED (arachnoidens) covered with a substance resembling a cobweb; (thread-like productions extending from leaf to leaf; as particularly exemplified in *Cobweb Houseleek*. E.)

COC'UM, see Cell.

COC'US, a name given to a Capsule when two or more are joined together. If two, di-coccus; if three, tri-coccus, &c. *Mercurialis* (*Dog's Mercury*) is an example of the di-coccus Capsule.

COCHLEA'TUM (pod) convoluted like a snail-shell.

COLORA'TUS, coloured.

COLOURED (coloratus) when a leaf or cup is any other colour than green; as the floral leaves of *Golden Saxifrage*.

COLUMN (columnella, or columella) the upright little pillar in the centre of some Capsules to which the seeds are fixed.

COLUMNAR (teres) differs from cylindrical by tapering upwards, like the shaft of a column; and is thus applicable to stens, some leaves, &c.

COLUMNEL'LA, or COLUMEL'LA, a column.

CO'MA, a comb.

COMB (coma) a collection of floral-leaves, terminating the flowering stem, as in *Sage* and *Crown Imperial*; it is remarkable also in *Pine Apple*.

COMB-LIKE (pectinatum) a sort of winged leaf, the leaflets of which resemble the teeth of a comb.

COMMON Calyx (calyx communis) including several flowers; see the introduction to the class Syngenesia. We have well known instances in *Dandelion* and all the *Thistles*. Pl. 4. f. 20.

———— RECEPTACLE (receptaculum commune) a seat for several flowers or florets included within one common Calyx; as is the case with most of the plants in the Class Syngenesia. *Dandelion* is an example. Pl. 4. f. 23. (a.)

COMMON FRUIT-STALK, bearing several flowers.

COMMUNIS (commun.)

COMPAC'TUS, firm.

COMPACT (*coarctatus*) growing close, and as it were pressed together.

COMPLETUS, complete flowers, such as have both a cup and a blossom.

COMPLICATUS, doubled together.

COMPOSITI (compound.)

COMPOUND FLOWERS; (*compositi flores*) consist of many florets or little flowers, upon one receptacle or seat, and included within one common Calyx: as most of those in the Class Syngenesia; a *Thistle* is a familiar example. Pl. 4. f. 19. 24. 25. Sometimes, but with less propriety, the flowers which grow in Umbels are called compound, as those in the second order of the Class Pentandria; of which the *Carrot* is a well-known instance.

COMPOUND UMBEL (*umbella composita*) when each umbel is subdivided into other little umbels or umbellules. Pl. 6. f. 9.

———— **BUNCH**, composed of several lesser bunches.

———— **SPIKE**, composed of several little spikes, spikets, or spikes &c.

———— **CORYMBUS**, composed of several small corymbs.

———— **LEAF**, when each leaf-stalk supports more than one leaf; or when one leaf is inserted into another, as in *Wood Horsetail*. Pl. 7. f. 47. 49. Pl. 8. f. 52. 53. 54. 55. 56. Pl. 9. f. 3. (a.) See also Doubly Compound; Triply Compound.

———— **BERRY**, when one large berry is composed of several small ones; as, for instance, *Raspberry*.

———— (**HAIRS** (*pili compositi*) either feathery, (*plumosus*) a simple hair with others laterally attached to it: or branched, (*ramosus*) lateral hairs given off from common stalks; or an erect stem, from whose summit smaller hairs diverge; or star-like, (*stellatus*) composed of many diverging hairs springing from a small knob sunk in the cutis as a common centre; as in *Marsh-mallow*. E.)

COMPRESSED (*compressus*) a term applied to a cylindrical substance more or less flattened. Thus suppose a straw to be the cylindrical substance; if this be pressed between the thumb and finger so as to flatten it, we should then say it was compressed. The cup of *Gilliflower* or *Wallflower* is compressed, and so is the blossom of the *Rattle*, and the pod of *Ladies'-smock*.

———— **LEAF**, one that is thicker than it is broad.

CONCAVE (*concavus*) hollowed out like a bowl; as are the petals of the *Cherry* or the *Hawthorn*; the leaves of *Broad-leaved Plantain*: or hollowed, in a more general sense, as the valves of the grasses.

CONCEPTACULUM, see Air-bag.

CONDUPLICATUS, folded or doubled together.

CONE (*strobilus*) a species of seed-vessel formed by a Catkin with hardened scales; containing a seed within the base of each scale; exemplified in *Pine* and *Fir*. Pl. 5. f. 18.

CONE-SHAPED (*cucullatus*) leaf, a term applied to leaves which are rolled up, as the grocers roll paper to put sugar or spices in, like a hollow cone.

CONFERTUS; crowded.

CONFLUENT (*confluentia folia*) running one into another at the base.

CONGESTUS, heaped together.

CONGLOMERATUS, congregated.

CONGREGATED (*glomeratus*) when several little spikes or panicles are crowded together somewhat in a globular form.—Examples are not uncommon among the Grasses; *Rough Cocksfoot* is one.

CONICAL (*cónicus*) shape of the *Alpine Strawberry*; nearly resembling the form of a sugar loaf.

CONJUGA'TUM, a winged leaf with only one pair of leaflets.

CONNA'TUM, united at the base.

CONNECTED, (*adnatus*) *Leaves* or *Stipulae*, such as have their upper surface at the base growing to the stem or branch.

CONNI'VENS, converging or approaching; closing.

CONTIGUOUS (*adpressus*) when a leaf, branch, or seed-vessel rises up so perpendicularly as to stand almost parallel and close to the stem, as if pressed to it. The pods of *Common Mustard* furnish an example; and the leaves of *Cress Mithridate*. Pl. 9. f. 6.

(CONTINUOUS (*continuus*) certain leaves or leaflets never separable from the stem or foot-stalk, as in *Ruscus*, the *Musci*, and *Jungermannia*. Sm. Gram. E.)

CONTRA'RIUM, see *Transversum*.

CONVERGING, (*connivens*) approaching each other at the top.

———— **LEAVES**, bent inward towards the stem. Pl. 9. f. 5.

(*a. a.*)

PETALS, leaning towards the centre of the flower, as in the *Peony* and *Globe-flower*.

———— **FILAMENTS**, as in *Borage*.

— **ANTHERS**, leaning towards each other, as in *Gill*, and *White Archangel* or *Dead-nettle*.

CONVEX (*convexus*) opposed to concave. Rising like the surface of a globe. The receptacle of the garden *Tansy* is convex.

CONVOLUTUS, rolled or twisted spirally.

COR'CULUM, the circle, or heart of a seed.

CORDA'TUM, heart-shaped.

CORIA'CEUS, leather-like.

CORNU'TUS, horn-shaped.

CORO'LLA, blossom.

CORO'NA, crown; (the top of a root. E.) see *Crowned*.

COR'TEX, the bark.

CORYM'BUS (*Broad-topped spike*.) differs from a spike in having the flowers of which it is composed not sessile, but standing each on its proper fruit-stalk, each of which again springs out of one common fruit-stalk. They are unequal in length, the lowermost being the longest, the others gradually shorter as they ascend, so that the whole collection of flowers forms nearly a flat and broad surface at the top. See Pl. 6. f. 7; or look at a *Pear Tree* when in flower.

COSTA'TUM, ribbed (leaf.) (The ribs comprising sap-vessels. E.)

COTTON (*tomentum*) **COTTONY** (*tomentosus*) or downy; covered with a whitish cotton-like substance, as the leaves of *Great Mullein* and *Marsh-mallow*.

COTYLE'DONES, seed-lobes.

CREEPING (*repens*) **STEM**; creeping along the ground, and sending forth little roots; *Violet* and *Ivy* are instances. Pl. 10. f. 8.

CREeping ROOT, as in *Spearmint*. Pl. 10. f. 7.

CRENA'TUS, (crenate. E.) scalloped.

CRESCENT-SHAPED (lunularis, lunatus) shaped like a new moon, as are the Anthers of the *Strawberry*.

———— **LEAF**. Pl. 7. f. 11.

CRESTED (cristatus) flowers, furnished with a tuft or crest, as are those of *Milkwort*.

CRISTA'TUS, crested.

CROOKEDLY BENT BACK (retrorsum-sinuatum.) See Pl. 7. f. 27.

CROSS-PAIRS (decussatus) when the leaves grow in pairs, and each pair points in a different direction to the pair next above or below it. Thus, if one pair point East and West, the pair next below it points North and South; the third pair crosses the second, the fourth the third, and so on. Pl. 9. f. 1.—**BRACHIATUS** seems to apply to branches or stems growing in the same manner.

CROSS-SHAPED (cruciatus) (cruciformis) **FLOWERS**; are those which have four petals disposed in the form of a cross. The *Gilliflower*, *Candytuft*, and *Cabbage*, are familiar instances. Pl. 4. f. 11. f. 12.

CROWNED (coronatus) **SEED**; is a seed to which the Calyx adheres, as in *Teasel*; or it is a seed furnished with down, as in *Dandelion*. Pl. 4. f. 22. f. 27.

———— **BERRY**, is a berry with the Calyx adhering; as in the *Honeysuckle*.

CRUCIA'TUS, Cross-shaped.

CRUCIFORMIS, see cross-shaped.

CRYPTOGA'MIA, (comprising plants whose stamens and pistils are either not well ascertained, or not to be numbered with any certainty. Sm. Introd. E.) see the Introduction to the Class so called.

(**CRYPTOGAMIC**, a term applied to numerous tribes of plants, whose organs are unobservable, or are not constructed so as to afford the usual means of referring them to Classes and Orders. These are also denominated *Acotyledones*, as apparently destitute of any cotyledon, and of any separate albumen. E.)

CUCULLA'TUS, core-shaped.

CUBIT, about half a yard; see Measure.

CUL'MUS, (a culm or straw; the stem peculiar to Grasses. E.)

CUNEIFORMIS, wedge-shaped.

CUP (perianthium) a species of Calyx contiguous to the other parts of the flower. It either includes one flower, as in the *Convolvulus* and *Gilliflower*; or several florets, as in the *Sunflower* and *Daisy*. Pl. 3. f. 1. f. 10. f. 5. (a.) Pl. 4. f. 7. (c.) f. 12. (b.) f. 13. 14. 18. (a. a. a.)

CUP, DOUBLE (calyculatus) when one Cup has another surrounding its base.

CURLED (crispus) **LEAVES**; as in *Endive* and *Curled Mint*. Pl. 8. f. 67.

CURTAIN or **WRAPPER**, (volva) the Calyx of Agarics and Boletus. It is sometimes fibrous, but generally like thin white leather. It surrounds the Stem, and is attached to the Pileus. When torn by the growth of the former and the expansion of the latter, the part sur-

rounding the Stem often remains, and in that state it is called the Ring. See Pl. 1. f. H. (a.)

CUSPIDATUS, prickly-pointed.

(CUTICLE, epidermis) a protecting membrane similar to the scarf skin in animal life, and covering the whole plant; supposed also to regulate the perspiration and absorption. It is familiarly exemplified in the *Birch* tree, from which it is continually peeling off: while in the *Oak*, its gradually accumulating layers form a portion, at least, of the rugged external bark. E.)

CUT-ROUND (circumscissus) when a seed-vessel does not open longways, in the usual manner, but in a circle surrounding it; like a snuff-box or an ivory egg; as in *Pimpernel*. Pl. 5. f. 9.

CYATHIFORMIS, glass-shaped.

CYLINDRICAL or round, (teres) like a walking stick; having the form of the TRUNK of a tree (tapering upwards, rather than precisely cylindrical, the sides converging, not running exactly parallel. E.)

———— of a STRAW; *Bullrush*.

· of a STALK; *Great Plantain*.

· of a STEM; *Asparagus*.

· of a LEAF; *Wild Garlic*; *Onion*. Pl. 8. f. 68.

· of a CUP; *Pink*.

———— CATKIN; *Reedmace*; *Hazel*.

CYMA, tuft, or CYME.

(CYPHEL'LA, a term of Acharius to designate a peculiar sort of pit or pore, on the under side of the frond, in that section of Lichens called *Sticta*. Sm. Introd. E.)

DAGGER-POINTED (mucronatus) not gradually tapering to a point, but ending suddenly in a sharp-pointed substance, like the blade of a dagger from its handle; as in the Calyx of *Phleum*.

DEBILIS, feeble.

DECAGYNIA, ten Pistils.

DECANDRIA, ten Stamens; see the Introduction to the Class so called.

DECAPHYL'LUS, ten-leaved; (cup.)

DECEMFIDUS, with ten clefts, (cup.)

DECEMLOCULA'RE, ten-celled, (Capsule.)

DECIDUOUS, (deciduus) LEAVES; those which fall off at the approach of winter.

———— CALYX or CUP; falling off before the blossom; as does that of *Thorn-apple*, *Cabbage*, *Ladies'-smock*, and *Poppy*.

SEED-VESSEL; falling off before it opens, as in the *Sea Rocket* and *Wood*.

DECLINING (declinatus) bent like a bow, with the arch downwards; as the seed-vessel of *Water Cress*; the filaments of *Bugloss*. See the lower Stamens in pl. 1. f. 11. f. 12.

DECOMPOSITUS, doubly compound.

(DECUM'BENS, decumbent, inclining downward, but not quite flat on the ground; as certain stems, rising a little upward at the base. E.)

DECURRENT (decurrens) leaf; when there is no leaf-stalk but the base of the leaf runs down the stem. *White Mullein* and *Musk Thistle* are examples. Pl. 9. f. 4. (c.)

DECURSI'VUM (leaf) when the leaflets of a winged leaf are decurrent upon the leaf-stalk.

DECUSSA'TUS, in cross pairs, decussated.

DEFLEX'US, deflexed, bending outwards in a small degree.

DEFLORA'TUS, applied to Anthers which have shed their Pollen.

DEHISCENS, opening or standing open.

DELTOIDE'US, triangular spear-shaped, or trowel-shaped.

DEMER'SUS, see *Submersus*.

DENDROI'DES, shrub-like.

DENTATO-SERRA'TUS, tooth serrated.

DENTATO-SINUA'TUS, toothed and indented.

DENTA'TUS, toothed.

DENTED (*retusus*) a blunt leaf, &c. with a dent or blunt notch at the end; as in *Broad-leaved Sea Heath*.

DENTICULA'TUS, set with little teeth.

DEPEN'DENS, hanging down.

DEPRES'SUS, depressed.

DEPRESSED, (*depressus*) when the surface of a leaf, &c. is in a small degree concave—pressed down—flatted.

(DETERMINA'TE (*ramosus*) abruptly branched, as applied to a stem; see *Abruptly*. E.)

(DEXTROR'SUM, turning from right to left. E.)

DIADEL'PHIA, see the Introduction to the Class so named.

DIAMOND-SHAPED, (*rhombus*) applied to leaves which resemble the figure of a diamond as painted on cards.

DIAN'DRIA (two stamens) the name of the second Class.

(DIAPH'ANOUS; semi-transparent, as horn; applied to several species of *Fuci*, *Ulcæ*, &c. E.)

DICHO'TOMUS, forked, (repeatedly; sometimes so applied in contradistinction to *Furcatus*, which may be supposed to express, having only one division. E.)

DICOC'CUS, two capsules united, each with one cell.

(DICOTYLEDONOUS: Plants whose *Embryo* divides at the top into two parts or lobes, which are the Cotyledons. In some instances there are a greater number of these parts. E.)

DIDYMA, double.

DIDYNA'MIA, see the Introduction to the Class so named.

DIFFOR'MIS, irregular in shape; of different shapes.

DIFFU'SUS, spreading, (or lax, as applied to a panicle. E.)

DIGITA'TUS, finger-like.

DIGY'NIA (two pistils) the name of several of the Linnæan Orders.

DIMIDIA'TUS, half round, extending half way round.

DIMPLED (*umbilicatus*) having a little hollow dot; as in the fruit of the *Barberry*.

DIOEC'IA, signifies that the flowers bearing Stamens, and those bearing Pistils, grow on different plants. Thus in the *Yew-tree*, if you find it in flower, and one of the flowers is furnished with Stamens, all the flowers upon that particular tree have *only* Stamens, and no Pistils; but if you find a flower with a Pistil and no Stamens, then all the flowers upon that tree will be found equally destitute of

Stamens. (The title of the twenty-second Class in the Linnæan System; the plants of which are now distributed among the other Classes according to the number of their Stamens. E.)

DI-PET'ALA, two-petaled.

DIPHYL'LUS, two-leaved.

DIS'CUS, disk.

DISK, of a leaf, signifies its surface, either upper or under.

DISK, of a compound or incorporated flower, signifies the central part only. Thus in a *Daisy*, the minute yellow florets form the Disk, and the larger white strap-shaped florets the Rays.

DISPER'MUS, two-seeded.

DISSEC'TUM, see *Laciniatum*.

DISSEPI'MENTUM, partition, (or valves of a capsule. E.)

DISSIL'IENS, bursting suddenly asunder.

DY'sTANT (*distans*) far asunder; as the stamens of *Mint*; or the whirls of the flowers of *Corn Mint*.

DISTENDED (*ventricosus*) as the cup of the *Rose*, or the under parts of the blossom of the *Forglove*. Pl. 4. f. 4.

DIST'ICHUS, two-rowed, or two-ranked.

DISTINCT, unconnected, separate from each other.

DIVARICA'TUS, wide-apart.

DIVERGING (*divergens*) spreading wide from the stem almost horizontally. This term is opposed to *compact*.

DIVISIONS. See the next article.

DIVIDED (*partitus*) applied to a leaf, a cup, or a petal; it signifies that it is parted more than half way down; as the petals of *Chickweed*; the cup of *Comfrey*, or *Borage*. Pl. 7. f. 28.

(— (*ramosus*) as applied to branched stems. E.)

DODECAN'DRIA (twelve stamens) the title of a class, which see.

DO'DRANS, a palm; about a quarter of a yard; see *Measure*.

DOLABRIFOR'ME (leaf) hatchet-shaped.

DORSA'LIS, fixed to the back.

(**DORSIFEROUS** (*dorsalis*) as the *Ferns*, bearing fructification on the back of the frond. E.)

DOTTED (*punctatus*) marked with little hollow dots; as are the leaves of *Sea Chamomile*; and the receptacle of some of the compound flowers. Pl. 4. f. 23.

DOUBLED together (*conduplicatus*) as are the leaves of *Black Cherry* before they unfold.

(**DOUBLE FLOWER**; see *Plenus*. E.)

DOUBLE (*didymus*) applied to the Anthers of several flowers, when upon one filament there are two Anthers united, like a double nut; as in *Ranunculus*, *Anemone*, *Celandine*, *Plum Cherry*. Pl. 3. f. 6. (h.)

— **CALYX**, (*duplex*, or *calyculatus*) when the calyx of a flower has another outer calyx surrounding it, as in *Marshmallow* and *Hollyhock*.

— **GERMEN**, when two Germens are united together; as in *Goosegrass* or *Cleavers*.

DOUBLY-COMPOUND (*decompositus*) LEAVES, having the primary leaf-

stalk divided, so that each division forms a compound leaf. They are of three different kinds.

1. **TWINFORK** (*bigeminus*) when a forked leaf-stalk bears several leaflets at the end of each division or fork. Pl. 10. f. 4.
2. **DOUBLY-THREEFOLD** (*bi-ternatus*) when a leaf-stalk with three divisions bears three leaflets upon the end of each division. Pl. 8. f. 57.
3. **DOUBLY-WINGED** (*duplicato-pinnatum*) (*bi-pinnatum*) when a leaf-stalk has lateral ribs, and each of these ribs form a winged leaf; example *Tansy, Yarrow*. Pl. 8. f. 56. For leaves more than doubly compound, see Triply Compound.

DOWN (*pappus*) the fine hair or feather-like substance crowning the seeds of some plants, and enabling the wind to scatter them abroad. In *Sow-thistle* it consists of simple or undivided hairs, but in the *Goat's-beard* it is branched, and then is called *feathered down*. Pl. 4. f. 22. (*l.*) Pl. 6. f. 2. (*a. b.*)

DOWNY (*leaf*) see Cottony.

DROOPING (*nutans*) for such is the most exact meaning of the term when applied to a Panicle, as it frequently is when speaking of the Grasses, whose spikets often hang down in an elegant pensile form.

DRU'PA, pulpy seed-vessel without valves, consisting of a hard nut or stone, encompassed by a pulpy substance, exemplified in the *Plum*, the *Cherry*, and the *Peach*. Pl. 5. f. 21.

DUPlica'TUS, doubled.

DUPlica'TO-CRENA'TUM, doubly scalloped.

———— **PINNA'TUM**, doubly winged.

———— **SERRA'TUM**, doubly serrated.

———— **TERNA'TUM**, doubly three-fold.

DUST, see Pollen.

DUSTED (*pulveratus*) some plants appear to be covered with a kind of dust or powder; as the *English Mercury*, and the leaves of *Auricula*.

EAR-SHAPED (*auriculatus*) somewhat resembling a human ear. It is also used to express a little appendage at the base of a leaf or leaflet.

EBRACTEA'TUS, without any floral leaf.

ECALCARA'TA, without a spur or horn.

ECHINA'TUS, set with prickles, (*echinatus*, as a hedge-hog. E.)

(**EDEN'TULUS**, without teeth. E.)

EGG-SHAPED (*ovatus*) signifies a shape resembling the solid substance of an egg, as the seed-bud of *Jacob's Ladder*, and the seeds of *Fennel*, or it implies only the form of an egg, if divided longways, as in the leaves of the *Beech-tree* or *Peppermint*. Pl. 7. f. 3.

EGG-SPEAR-SHAPED (*ovato-lanceolatum*.) See Spear-egg-shaped.

ELLIP'TICUM, see Oval.

EMARGINA'TUM, notched at the end. (According to Smith, as applied to the termination of leaves, *emarginate*, or *nicked*, having a small acute notch at the summit, as in those of *Bladder Senna*. See Curt. Mag. t. 61. E.)

EMBRACING (*amplexicaulis*) the **STEM**; when the base of a leaf nearly

- surrounds the stem, as in *Solomon's Seal*, *Poppy*, and *Borage*. Pl. 9. f. 4. (f.)
- (EMBRYO, (Coraculum of Linn. see Heart) the Germ, or most essential part of a seed, situated between the cotyledons; and whence springs the stem upwards and the root downwards. E.)
- EMBAYMENT, see Calyx.
- EMBRITLED, bristly.
- EMBRITLED, nine Pistils.
- EMBRITLED, nine Stamens.
- EMBRITLED, bristly, or without joints, (as the stems of certain Grasses. E.)
- EMBRITLED (leaf) sword-shaped.
- EMBRITLED (Integer) LEAF, or PETAL; this term is opposed to cloven, or cleft, indented, &c. but it does not signify that it is not serrated or scalloped. When a leaf is said to be very entire (integerrimus) we understand that it is not even scalloped or serrated. The leaves of *Nettle* are *entire*, but those of *Lilac* are *very entire*. Pl. 7. f. 1. 35. entire leaves, f. 39. 40. very entire leaves.
- (EMBRITLED, entire. E.)
- EQUAL (equalis) sometimes signifies regular, all alike; as the blossoms of *Tagetes*. The florets forming the compound flowers of the first order of the Class Syngenesia are said to be equal: that is, they are all alike in being equally furnished both with Stamens and Pistils.
- EQUITANS, folded one upon another; laminated (or equitant, as applied to the insertion of certain leaves. E.)
- ERECTUS, upright, erect.
- EROSUM, gnawed.
- ESSENTIAL CHARACTER (character essentialis) is a single circumstance serving to distinguish a genus from every other genus. Thus *Crucifera* (Rutaceae) is distinguished from other genera by the Sectary at the base of each petal; and *Colewort* is known from all other genera in the same natural order, by the four longer bracts being forked at the top.
- EVENNESS) SURFACE, level, regular, in opposition to scored, furrowed, or other inequalities, occasioned by deficiency of substance, or by the presence of hairs, &c.
- EXANNULATÆ, or THECATÆ; descriptive of such of the capsules of *Ferns* as are not provided with a transverse ring. E.)
- (EVERGREEN, (semper-virens) as opposed to deciduous; plants which retain their leaves at all seasons: the leaves being so gradually cast off and re-produced, that the tree or shrub is never stripped. E.)
- EXARATUS, see Furrowed.
- EXCRESCENCE, (apophysis) a substance growing from the seat of the flower in some of the *Mosses*.
- EXPANDING (patens) standing in a direction between upright and horizontal; as the petals of the *Strawberry*, the branches of most plants, and the leaves of *Brooklime* *Speedwell*. Pl. 9. f. 5. (c. c.)
- EXsertus, protruding; opposed to inclosed.
- EXTIPULATUS, without Stipula.

EXTRAPOLIA'TUS, underneath the leaves.

EYE (hilum) the external scar upon a seed by which it was fixed to the seed-vessel (and through which the internal parts are nourished.

E.) it is very remarkable in a *Bean*. Pl. 6. f. 3. (e.)

FARC'TUS, filled full.

FARI'NA, see Pollen.

FASCICULA'RIS, } (bundled, or fasciculated. E.)

FASCICULA'TUS, }

FASCIC'ULUS, a bundle.

FASTIGIA'TUS, flat-topped.

FATHOM (orgya) see Measure.

FAU'X, mouth.

FAVO'SUM, honey-combed.

FEATHERED, (plumosus) the down of seeds sometimes consists of fine simple or undivided hairs, in others it sends out lateral hairs, and then it is said to be feathered. Pl. 4. f. 22. (l.) Pl. 6. f. 2. (b.)

FEEBLE (debilis) not strong enough to stand upright.

FEMALE FLOWERS, or **FLORETS**; such as contain one or more Pistils, but no Stamens.

FEMINE'US, see Female.

FENCE, see Involucrum, and Involucellum.

FERNS, see Filices.

FERTILE FLOWERS (fertiles vel feminei flores) those that produce seeds capable of vegetation; as is very generally the case in flowers which have both Stamens and Pistils. Flowers that have only Stamens, never can produce seeds; and flowers that have only Pistils *must* be barren, if they are so situated as to be out of reach of the Pollen, from the Anthers of the stamiferous flowers; in some instances they will indeed produce seeds to all appearance perfect; but these seeds never vegetate.

FIBRES (nervi) woolly strings or nerves, running undivided from the base to the extremity of the leaf; as in the *Broad* and *Narrow-leaved Plantain*. Pl. 7. f. 46. These kinds of fibres, whether branched or not, have been indifferently called nerves and veins, but without much proof that they are destined to the office of either. Perhaps they ought rather to be considered as ribs, intended only to strengthen the leaf.

(—— (radiculæ) the real and indispensable feeders of the root, without which the other parts cannot sustain vegetation. E.)

FIBROUS (fibrosus) **ROOTS**: composed of small threads or fibres (only, as most grasses, and annual plants. E.) Pl. 10. f. 7.

FIDDLE-SHAPED (panduriformis) oblong, but narrowed in the middle and broader below, as is the leaf of one species of *Dock*, supposed to resemble a violin, therefore called *Fiddle Dock*.

FILAMENT, or thread, (filamentum) the thread-shaped part of a Stamen, supporting the Anther. See Stamen; see also Pl. 3. f. 3. (h.) f. 6. (g.) and Pl. 1. f. 19. (a. a.)

FILICES, **Ferns**, the name of the natural assemblage of plants constituting the second Order of the Class Cryptogamia.

FILIFORMIS, thread-shaped.

FIMBRIATUS, fringed: (more vaguely bordered as a flounce, as opposed to *Ciliatus*, having soft hairs like an eye-lash. E.)

FISSUM, cloven.

FISTULOSUS, hollow.

FIVE-CORNERED (quinguangulare) leaf. See pl. 7. fig. 20.

FLACIDUS, limber, feeble; see *debilis*.

(**FLAGELLIFORMIS**, long and pliant; as the stem of the *Common Jasmine*. E.)

FLAGELLUM, a runner.

FLATTED, see *Compressed*.

FINGER-LIKE (*digitatus*) a species of compound **LEAVES**, resembling the expanded fingers of the human hand; so that two or more leaves are joined to the end of an undivided leaf-stalk, as in those of *Wild Black Hellebore*, *Lupinus*, and *Horse Chesnut*. Pl. 7. f. 48.

FINGER-LIKE, they may be **IN PAIRS** (*binatus*) with two terminating leaflets. Pl. 7. f. 50.

———— **IN THREES** (*ternatus*) with three terminating leaflets. Pl. 7. f. 51.

———— **IN FIVES** (*quinatus*) with five terminating leaflets.

FIRM (*compactus*) applied to the texture of a leaf.

FLAT-TOPPED (*fastigiatus*) rising to the same height, so as to form a flat, or nearly flat surface at the top.

FLESHY SEED-VESSEL, see *Pomum*.

———— **LEAF, or ROOT** (*carosum*) as the leaves of *Sedum dasyphyllum*; ——— more solid than pulpy; as the fruit of the *Apple*; the root of the *Turnip*; and the leaf of *Round-leaved Stonecrop*.

FLEXIBLE (*flexilis*) readily bending without breaking.

(**FLEXUOSUS**, zig-zag; not strictly angular, but winding alternately from right to left, and from left to right, as do certain stems and branches. E.)

FLOATING (*natans*) applied to aquatic plants, whose leaves or flowers float upon the surface of the water: e. g. *Water-lily*, *Pond-weed*.

FLORAL-LEAVES (*bractæ*) differ in shape or colour from the other leaves of the plant; they are generally placed on the fruit-stalk, and often so near the flower as in some instances to be easily mistaken for the Calyx; but the Calyx dries or withers when the fruit is ripe, whereas the floral leaves endure as long as the other leaves of the plant. Examples of floral leaves may be seen in the *Pansy*, the *Lime-tree*, *Hellebore*, *Passion-flower*, *Sage*, *Wild Marjoram*; and many others. Pl. 9. f. 8. (a. a.)

(*florale fol.*) means also, sometimes, the leaves more immediately approaching the flower, though not properly floral-leaves.

FLORET (*flosculus*) a little flower, one of the small flowers composing a compound or incorporated flower. See the Introduction to the Class *Sagaxeresia*. They are **TUBULAR**; that is, formed of a tube cloven into five parts at the border, as in *Tansy*; or **NARROW** when the blossom is long and strap-shaped, as in *Dandelion*. In *Daisy* and *Sunflower*, the florets in the centre are **TUBULAR**, and

those in the circumference **NARROW**, or **RADIATE**. Pl. 4. f. 21. f. 24. f. 26. In the second Order of the Class Pentandria, which contains the Umbelliferous plants, the florets composing the Umbels are each formed of five Petals. When the petals are all of the same size and shape, the florets are said to be **EQUAL**; as in *Angelica* and *Cellery*; but when the outer petals are larger than the others, the florets are said to be **RADIATE**; as in *Shepherd's Needle* and *Carrot*.

FLOS, a flower.

FLOS/CULUS, a floret.

FLOSCULO/SUS, a tubular floret.

FLOWER (flos) a temporary part of a plant appropriated to the production of seeds; it is composed of seven parts; the **CALYX**; the **BLOSSOM**; the **STAMENS**; the **PISTILS**; the **SEED-VESSEL**; the **SERDS**; and the **RECEPTACLE**. To these perhaps we may add an eighth, viz. the **NECTARY**. It is not necessary that all these parts should be present to constitute a flower. **INCOMPLETE** flowers are deficient in one or more of the parts. *Hyacinth* and *Tulip* have no Calyx. *Mistletoe*, *Gale*, *Hop*, *Yew*, *Dog's Mercury*, *Nettle*, and the flowers of the plants bearing Catkins, have no blossoms. *Ground Ivy*, *White* and *Red Dead-nettle*, and all the plants in the first Order of the Class Didynamia, have no seed-vessels.

FOLIA/CEUS, leafy.

(**FOLIA/TION**, the manner in which the leaves are folded up in the hybernaculum; which may be either folded, overlapping, or rolled. E.)

FOLI/OLUM, leaflet; or leaflet.

FOLI/UM, leaf.

(**FOLLICULAR GLAND**: see *Glandula follicularis*. E.)

FOLLIC/ULUS, an air-bag, or follicle.

FOOT (pes) see *Measure*.

(**FOOT-STALK** (petiolus) see *Leaf-stalk*. E.)

FORKED (furcatus, dichotomus) dividing and often subdividing into forks, as the branches of most of the *Spurges*; the fruit-stalks of *Common Calamint*, and the *Pink*; the *Style* of the *Currant*. Pl. 10. f. 4. (or a certain description of stem. E.)

FORNICA/TUS, vaulted. It also signifies closed, when applied to the blossom of the rough-leaved plants in Pentandria Monogynia, meaning that the top of the tube is shut, or closed.

FOUR-CORNERED (tetragonus) as the stem of the *Dead-nettle*.

(**FOUR-RANKED**, (brachiatus) as applied to a stem, whose branches extend in four exactly opposite directions. E.)

(**FRINGE** (peristoma) which see, E.)

FRINGED (ciliatus) as the blossom of *Buckbean*, and the *Garden Nasturtium*; or the leaves of the *Cross-leaved Heath*. Pl. 7. f. 43. The term *fimbriatus* has also been used to express the fringe of a blossom.

(**FRONDOSE** (frondosus) Plants whose fructification originates from what is at the same time both leaf and stem; as in *Fuci*, *Filices*, *Hepatica*, &c. E.)

FRONS, a frond; (thallus of Acharius. E.) a term designed to signify that the stem, root, and leaf, are all in one, as in the *Ferns*, the *Fuci*, *Lichens*, &c. (Its use is limited to the Cryptogamia Class. E.)

FRUC'TUS, fruit.

FRUTEX, a shrub.

FRUIT (fructus) a part of a flower consisting of the **SEED-VESSEL**, the **SEED**, (immediately destined to continue the species. E.) and the **RECEPTACLE**.

FRUIT-STALK (pedunculus) a part of a stem or branch, bearing flowers but not leaves. Pl. 9. f. 5. (m.) f. 8. (c.) pl. 6. f. 7. (a. a. a. a. a.) (It may be either terminal or lateral: if lateral, it is either axillary, or *oppositifolius*; or *interpetiolaris*; or *internodis*. It is termed *gemmaceus*, when proceeding from the same bud with the leaves. It is simple, or compound; solitary or aggregate; erect, spreading, drooping or pendulous. Sm. Gram. E.)

FRUTICO'SUS, shrub-like.

FULCRA, props (appendages belonging to the herbage of a plant. E.)

(**FULCRA'TUS**, supported. E.)

FULGINO'SUS, sooty.

FUNGI, the last Order of the Class Cryptogamia.

FUNNEL-SHAPED (infundibuliformis) applies to a blossom of one petal; the lower part of which is tubular, the upper part conical, as in *Hound's Tongue*, *Bugloss*, *Consilips*. Pl. 4. f. 7.

Cup; as in *Thrift*.

FURCA, a fork.

FURCA'TUS, forked. (By some this term is limited to express one division into two parts; whereas dichotomous is supposed to imply several successive divisions. E.)

FURROWED (sulcatus) marked with deep lines running lengthways.

FUSIFORMIS, spindle-shaped (as a Tap-root. E.)

GA'LEA, a helmet.

GAPING (ringens) (personatus) **BLOSSOM**; so called from the resemblance to a gaping mouth, when squeezed on each side. *Toadflax* and *Snafdragon* are instances. Pl. 4. f. 8. 9. 10. (It has been objected that this definition does not apply equally to both these terms; personatus neither grinding nor gaping (except indeed by artificial compression) the lips being closed: the labiate corolla, answering better to ringens, gaping. E.)

GELATINOUS, jelly-like.

GEM'INIS, in pairs.

GEM'MA, a bud.

(**GEMINA'CEUS**, when proceeding from the same bud with the leaves; as a flower-stalk so circumstanced. E.)

GENERAL INVOLUCRE (involucrum) a species of Calyx placed at the base of a general Umbel, as in *Carrot*, *Angelica*, or *Lovage*. It consists of one or more leaves. Pl. 6. f. 9. (c. c.)

(**GENERIC CHARACTER**, according to the Linnæan principle, is deduced from the fructification alone. Sir James Smith considers the seeds and flowers of the Umbelliferous and Cymose plants quite sufficient

for this purpose, rejecting the involucre as precarious and changeable. E.)

GENUS, } See the Introduction.
GENERA, }

GENERIC DESCRIPTION consists of an accurate description of the different parts composing a flower; and all those plants whose flowers agree with this description, are species of the same genus. (See the Introduction.)

GENICULATUS, knee-jointed (or bent angularly, as the culms of many Grasses. E.)

GENICULUM, a knee-joint; sometimes it also signifies simply a knot or joint without implying any bend.

GERMEN, or SEED-BUD, the lower part of a Pistil. It is the rudiment of the seed-vessel, or of the embryo fruit. See Pistil. Pl. 3. f. 2. (d.) f. 5. (c.) f. 7. (i.)

GIBBUS, bulged, or bulging, gibbous.

GILLS (lamellæ) the thin plates on the under side of the Pileus or Hat of an Agaric. Well known in the *Common Mushroom*.

GLABER, smooth.

GLANDS (glandulæ) secretory vessels (separating and discharging a resinous, oily, or saccharine fluid, &c. E.) differently situated in different plants. In the *Willow* they are placed at the margins of the leaves; in *Bird's Cherry* and *Almond Tree* at the base of the leaves; in *Butternut* and *Sundew* upon the surface of the leaves, and in the *Plum* on the inner side of the Calyx. Pl. 10. f. 6. (c. c.) pl. 11. f. 1. (a. a. a. a.)

(GLANDULA FOLLICULARIS, Follicular Gland; is in the form of a small sac or follicle, generally found in the substance of leaves, and furnished with an excretory duct which opens upon the under disk of the leaf. Its transparency gives the leaf a punctured appearance when held up to the light; as in *Perforated St. John's Wort*.

PAPILLARIS SIMPLEX, simple Papillary Gland, a small tubercular elevation, situated on the lower disk of leaves.

PAPILLARUM COMPOSITA, Compound Papillary Gland, as on the leaf of the *Stone Pine*, streaked with whitish lines on which are series of small black spots; each of which is the excretory pore of a compound gland, composed of six distinct glandules, forming a collar around the pore.

SQUAMOSA; Scaly Gland, resembling a minute scale on the surface of a leaf; having a white fluted border, which is the base of an inverted cone, the real gland.

PEDICELLATA; Pedicellated Gland; of which there are four kinds; elevated on stalks.

CYATHIFORMIS; Cup-shaped Gland; on a short foot-stalk; cellular; into which may be traced a cord of both spiral and proper vessels.

CLAVIFORMIS; Knob-shaped Gland; resembles a small nail; the head, which is the glandular part, is slightly convex on the upper surface; with a rough striated border, encircling a flat spot

from which the fluid is discharged. Generally found on the stem, or the petiole of the leaf.

GLANDULA STIPITA'TA; Stipitate Gland; is on a long-slender stalk; the smallest of the supported external glands; situated either on the margin of the leaves, or, as in *Sundew*, on the disk.

PEDICULA'TA RAMO'SA; Branched Pedicellated Gland; small, hemispherical, supported on a branched stalk; each gland furnished with vessels, branches of a fasciculus which enters the gland-bearing stalk at its base; secreting a viscous matter, sometimes odorous. The Moss on the stem of the *Rose* is produced by such glands. Thoms. E.)

GLASS-SHAPED (cyathiformis) tubular, but dilated towards the top like a drinking glass; as the cup of *Jacob's Ladder*; the summits of *Field Southern-wood*; the Nectary of the *Nettle*.

GLAU'COUS (glaucus) a kind of hoary, or grey bluish green, as the back of a *Cabbage* leaf. It is frequently called sea-green.

GLOBO'SUS, globular.

GLOBULAR (globosus) like a round ball; as the cup of the *Burdock*; the seed-vessel of *Flax*; the seed of the *Pea*; the capsule of the *Poppy*. Pl. 5. f. 5.

GLO'CHIS, a barbed point.

GLOMERA'TUS, congregated.

GLU'MA, a husk or glume.

GLUTINOUS (glutinosus) covered with a slippery or adhesive slime.

GLOSSY (nitidus) smooth and shining, as the fruit of the *Sweet Briar*; the leaves of *Holly*, *Jay*, and *Box*.

GNAWED (erosum) as when an indented leaf appears as if it had also been gnawed or bitten at the edges. Pl. 7. f. 21.

(**GONGY'LE**; see Sporules. E.)

(**GONGYLUS**; in a particular sense, according to Gartner, means a simple, leafless, somewhat globular, solid germ, attached to the parent under the bark, and separating spontaneously from it. It is of a more solid consistence than the propago, and has an epidermis. E.)

GRAIN (granulum) an excrescence upon the valves of the Calyx of some of the *Docks*, in size and shape somewhat like a grain of corn. It is also called a Bead.

GRAINED (graniferus) bearing a grain or bead.

GRAM'INA, grasses.

GRANULATIONS (acini) the small berries, which, joined together, compose a large one, as in *Mulberry*, *Blackberry*, and *Raspberry*.

GRANULA'TUS, beaded (as a granulated root. E.)

GRISTLY (cartilagineus) as in the edge of some leaves, being stronger and more transparent than the rest of the leaf.

(**GYMNOCAR'PI**; a division of Fungi according to Persoon, bearing their seeds imbedded in an hymenium, a diluted, exposed membrane. E.)

GYMNOSPER'MIA, seeds naked; the title of the first Order of the Class. *Didynamia*.

GYNA'NDRIA, Stamens on the Pistils. The twentieth Class of the Linnean System, but the plants of that Class are now arranged according to the number of their stamens.

HABITATIO, the natural place of growth of a plant in its wild state.

This is now generally expressed by the word *Habitat* or *Station*.

HAIR-LIKE (*capillaris*) slender, undivided, and cylindrical; as the filaments in *Plantain*, *Rye-grass*, *Reed*, and most of the grasses.

HAIRS (*pili*) (are generally jointed and tubular; protect plants against heat and cold, or the attacks of animals; and are often excretory ducts, discharging an oily, glutinous, odoriferous, or colouring fluid. *Sm. Gram. E.*)

HAIRS-BREADTH, see *Measure*.

HALBERT-SHAPED (*hastatus*) as the floral leaves of the *Pansy*; the leaves of *Sheep's Sorrel* and *Cuckoo-pint*. *Pl. 7. f. 15.*

HAMOUS, hooked.

HAMUS, a hook.

HANDS-BREADTH, *palmus*.

HAND-SHAPED (*palmatus*) resembling a human hand with the fingers expanded; as the leaves of *White Briony*; *Passion-flower*; and the roots of *Spotted Orchis*. *Pl. 7. f. 22.*

HASTATUS, halberd-shaped.

HAT (*pileus*) the upper broad expanding part of *Fungi*. In *Mushrooms*, the hat is often called the flap. *Pl. 1. f. H. (c.)*

HATCHET-SHAPED, LEAF (*dolabriforme*) like a hatchet or axe of unequal thickness.

(**HAUSTORIA**; small tubercles, or absorbing warts, by which some parasitic plants, as *Dodder*, attach themselves to other plants. These warts are of a mixed character, performing at the same time the functions of an attaching prop, and of a nutrient absorbing organ. *E.*)

HEADED (*capitulus*) **STALK**; when a stalk supports one compact knob or head of flowers upon its extremity, as in *Thrift*.

HEADS (*capitatus, capitulum*) of **FLOWERS**; when flowers grow together in compact knobs; as in *Peppermint*, *Watermint*, *Common Thyme*.

HEART (*corculum*) that part of a seed which is a future plant in miniature. *Pl. 6. f. 3. (b.)*

HEART-SHAPED (*cordatus*) a term used to express the form of a petal, a leaf, &c. the leaves of *Water-lily*, *Dead-nettle*, *Burdock*, and *Violet*, are heart-shaped. *Pl. 7. f. 10.*

HEART-ARROW-SHAPED (*cordato-sagittatum*) applied to express the shape of a leaf. *Pl. 7. f. 14.*

HELMET (*galea*) a term to express the upper part of a gaping blossom, which bears some resemblance to a helmet. See the Introduction to the *Class Didynamia*.

HEMISPHERICAL (*hemisphericus*) in the shape of half a globe; as the Cup of *Tansy*.

HEPTANDRIA, seven-stamened. The name of the seventh Class.

HERBACEOUS (*herbaceus*) **STEM**; one that is succulent and tender, in opposition to one that is woody: it perishes annually down to the root. The *Pea* and *Nettle* are instances. The stem of the *Gilliflower* is somewhat woody.

(—————) **LEAF**; all leaves may be considered so; but the

term more determinately signifies a soft, pliable leaf, the vascular fasciculi of which are as succulent, and scarcely firmer than the rest of the leaf; as in *Spinach*. E.)

(HERBARIUM, or HORTUS SICCUS; a collection of dried plants. E.)

HERMAPHRODITE (hermaphroditi) flowers or florets; such as contain one or more Stamens, and also one or more Pistils, as is the case with the greater part of flowers.

HEXA'GONUS, hexagonal, or six-sided.

HEXAGY'NIA, having six Pistils.

HEXAN'DRIA, six-stamened. The name of the sixth Class.

HEXAPET'ALUS, six-petaled.

HEXAPHYL'LUS, six-leaved.

HI'ANS, open; in opposition to closed.

HI'LUM, the eye of a seed.

HIRSU'TUS, rough, with strong hairs; shaggy.

HIR'TUS, rough-haired.

HISPIDUS, hispid; rough with stiff bristly hairs.

HOARY (incanus) covered on one or both sides with a very fine white silvery looking substance.

HOLLOW (cavus) as is a straw.

HONEY-COMBED (favosum, alveolatum) a receptacle divided into cells, open at the top, with a seed in each cell.

HONEY-CUP, see Nectary.

HOODED, see Cone-shaped.

HOOF-SHAPED (ungulatus.)

HOOK (hamus) a thorn or a bristle hooked at the end. (Mr. Thomson considers it as a real fulcrum, as illustrated in *Cleavers*; the hooks enabling the plant to climb to the tops of hedges. E.)

HORIZONTAL (horizontalis) a leaf or branch which grows from the stem pointing to the horizon, and parallel to the surface of the earth. Pl. 9. f. 5. (d. d.)

HORN-SHAPED (cornutus) like the Nectary or spur of the *Larkspur*. Pl. 5. f. 4. (a.)

(HORTUS SICCUS; see Herbarium. E.)

HUNCHED; see Bulging, or Gibbous.

HUSK (gluma) the Calyx and the blossoms of grasses are called husks: they are thin, dry, and semi-transparent, like chaff; a husk consists of one or more leaves, called *Valves*, and, when contiguous to other parts of the flower, inclosing the Stamens, and Pistils, answers the purpose of a *Blossom*; but, when placed on the outer side, and inclosing the inner valves, as well as the Stamens and Pistils, it is called the Calyx. This kind of Calyx frequently contains several florets. See the plate of *Grasses*.

(HYBERNA'CULUM, or winter habitation; in a particular sense may be defined, an organic body which sprouts from the surface of different parts of a plant, enclosing the rudiments of the new shoot; and which is capable of evolving a new individual similar to the parent. The Propago, Gongylus, and Bulb, separate spontaneously from the parent: the Gem or Bud does not do so. Thom. Lect. E.)

HYBRIDA, a plant produced by the Pollen of one flower fertilizing or

impregnating the Germen of another flower, of a different species. These productions are called Hybrids or Mules, (and not being original species, are incapable of propagation. E.)

(HYMENIUM: the receptacle of the seeds; or, the surface in which the fructification is situated, particularly in the *Fungi*. E.)

HYPOCRATERIFORMIS, salver-shaped.

JAGGED (laciniatus) LEAVES; such as are variously divided into lobes, and these lobes again divided in an irregular manner. The *Pansy* is an instance. Pl. 7. f. 24.

ICOSANDRIA, twenty-stamened; the name of the twelfth Class in the Linnæan System.

IMBERBIS, beardless.

IMBRICATUS, tiled, or imbricated.

(IMMERSED (immersus) growing entirely beneath the surface of the water, as certain *Marine Algæ*, &c. E.)

IMPERFECT (imperfectus) flowers, such as want either Anther or Pistil, or both.

INEQUALIS, unequal.

INANUS, pithy.

INCANUS, hoary.

INCH (pollex) see Measure.

INCISUS, snipt.

INCLINANS, leaning.

INCLUDENS, inclosing.

INCLUSUS, inclosed.

INCOMPLETUS, incomplete.

INCOMPLETE (incompleti) FLOWERS: such as want either the cup or the blossom. The *Tulip* wants a cup: and the *Nettle* is without a blossom.

INCRASSATUS, thickest upwards.

INCUMBENT (incumbens) fixed by the side when applied to Anthers; leaning or resting against, when applied to Stamens: (also when the edges or borders of Cotyledons are applied to the curved radicle. E.)

INCURVATUS, bowed inwards.

INDENTED (sinuatus, E.) (sinuatus) LEAF; the edges of an indented leaf are hollowed or deeply scalloped, the lobes standing asunder as if part of the leaf had been cut off. The leaf of the *Oak* or *Turnip* are familiar examples. See also Pl. 7. f. 25.

INDISTINCT (obsoletus) not well defined.

INDIVIDUAL (proprius) BLOSSOM: the blossom belonging to a single floret in a compound flower. Thus in *Carrot*, each floret is composed of five petals, which constitute the blossom of that individual floret. The individual blossoms in *Pansy* are all tubular; in *Dandelion* they are all long and strap-shaped. In *Sunflower* they are tubular in the centre, and strap-shaped in the circumference. Pl. 4. f. 21. f. 26.

INDIVISUM, leaf undivided.

INERMIS, unarmed.

INFERUE, beneath.

INFLATED (inflatus) distended, like a blown up bladder.

INFLATUS, bladder-shaped ; or inflated.

INFLEXIBLE, see *Rigid*.

INFLEXUS, bent inwards ; inflexed.

(**INFLORESCENTIA**, mode of flowering, or manner in which flowers are situated : see the respective terms : also the Introduction. E.)

INFUNDIBULIFORMIS, funnel-shaped.

INTEGER, entire.

INTEGERIMUS, very entire. See *Entire*.

(**INTEGUMENT**, cellular : a substance lying beneath the cuticle, therefore commonly compared to the *rete mucosum* of animals, but not answering thereto in its functions. It is the seat of colour, and forms the principal substance of leaves. E.)

INTERNO'DIUM, the space between the joints.

(**INTERPETIOLARIS**, between two foot-stalks. E.)

(**INTERMEDIATE** ; referring to a Cup, Calyx, or Perianth, surrounding the Germen about the middle. E.)

INTERRUPTED (interruptus) broken in its regular form ; as the spike of *Wood Betony* ; the leaves of some species of *Ladies' Finger*. A spike may be interrupted by the intervention of leaves, or smaller sets of flowers, or by the naked stem appearing ; a winged leaf may be interrupted by the intervention of smaller pairs or little leaves. Pl. 8. f. 55.

INTORSIO, twisting.

INTRAFOLIAEUS, within the leaves.

INVERSELY-HEART-SHAPED, (obcordatus) with the point of the heart next to the stem ; as the seed-vessel of *Shepherd's Purse* ; the petals of *Geranium* or *Marsh-mallow* ; and the leaves of some of the *Trefoils*. Pl. 8. f. 69. where each of the leaflets is so shaped.

INVOLUCELUM, or partial Involucrum, is the Calyx surrounding the base of an Umbellule. Pl. 6. f. 9. (d. d. d. d.)

INVOLUCRUM, or FENCE, the Calyx of an Umbel. It is placed at some distance from the flowers (and by some considered a modification of the bractea, rather than a calyx. E.) It is either *General* or *Partial*. The *Carrot* furnishes instances of both. The *General* Involucrum is placed under the Umbel ; the *Partial* under the Umbellules. Pl. 6. f. 9. (c. c.) (d. d. d. d.) (The Involucrum of *Ferns* is membranous, covering the masses of fructification, termed *Sori*. Sm: Gram. E.)

INVOLUTUS, rolled inwards.

JOINT, articulus.

JOINTED (articalatus) **STEM** ; a *Wheat* straw is an instance familiar to every one. Pl. 10. f. 3.

—— **LEAVES** ; as in the *Indian Fig*. Pl. 9. f. 3. (a.)

—— (**ROOT**, as that of *Wood Sorrel*. E.)

JUGA, pairs ; bi-juga, two pairs ; tri-juga, three pairs ; applied to the leaflets of a compound leaf.

(**JUICE** ; (succus proprius) the peculiar juice of a plant, from which all the secretions are derived, is produced by the exposure of the sap to air and light as elaborated in the leaves. It is frequently colourless :

in *Spurge*, a milky emulsion; in *Celandine*, yellow; in *Bloody Dock*, red; in *White Poppy*, white, changing to brown on exposure to air, (Opium;) from the proper juice the secretions are formed, as oils, acids, and alkalies, resin, even *silica* (siliceous particles), &c. Mr. Thomson assures us that "the elementary principles of the proper juice, and of the sap, are the same, viz. carbon, hydrogen, and oxygen, but differing in proportions; these same principles, differently modified, form all the secretions and the solid materials of the plant itself: Extraneous ingredients, as salts, oxyds, and earths, may probably be imbibed by the absorbents of the roots." E.)

IRREGULAR (irregularis) a term applied to compound flowers wherein the florets are not uniform; as in *Carrot* and *Coriander*.

— **BLOSSOM**. See Regular.

KEEL (carina) a name given to the lowermost petal in a butterfly-shaped blossom, from its supposed resemblance to the keel of a ship; see the Introduction to the Class Diadelphia. See also pl. 4. f. 17. and f. 13. (d.)

KEELED (carinatus) bent like the keel of a ship or boat; as the Style of the *Pea*; the Calyx of *Canary Grass*. Pl. 2. f. 10. (a. a.)

KIDNEY-SHAPED (reniformis) as the seed of the *French Bean*, the anthers of *Mallow*; the leaves of *Ground Ivy*, *Golden Saxifrage*, and *Meadowbout*. Pl. 7. f. 9.

KNEE-JOINTED (geniculatus) when a straw or stem is a little bent at the joints. Pl. 2. f. 21. the Awns.

KNOB (capitulum.) Set Head.

KNOT (nodus) a joint; remarkable in the stems or straws of Grasses.

LABIATUS (flower) having lips: (labiate. E.)

LABIUM, lip.

LACERUS, ragged.

LACINIA, segments.

LACINIATUS, jagged.

LACTESCENT (lactescens) abounding with milky juice.

LACUNOSUM, pitted.

LÆVIS, level; as a smooth even surface of a stalk or leaf, &c.

LAMELLÆ, gills.

(**LAMELLATA**, lamellated, in layers, or coats, as in a kind of root. E.)

LAMINA, a thin plate or border.

LAMINATED (equitans) when the flat surfaces or leaves lie close one upon another.

LA'NA, wool.

LANATUS, woolly.

LANCEOLATUS, spear-shaped.

LANCEOLATO-OVATUM, spear-egg-shaped.

LANUGO, soft wool, or down.

LATERAL (lateralis) **BRANCHES**, growing from the sides of the stem; opposed to *terminating*.

— **FLOWERS**; those which grow from the sides of the stems or stalks; thus the spikes of flowers in the *Common Speedwell* grow on lateral fruit-stalks, or on fruit-stalks proceeding from the sides of the stem.

LATTICED (cancellatus) open like lattice-work.

LAXUS, limber or loose, in opposition to crowded or compact.

LEAF (folium) the green leaves which are the lungs of plants, (absorbing the deleterious carbonic acid gas, decomposing it, adding the carbon as nourishment to the sap, and giving out again purified oxygen: (which process is to a certain extent reversed in the dark;) and the organs of motion, in themselves pulpy and vascular; in form exceedingly variable: they receive the sap from the wood by one set of vessels, and expose it to the action of air, light, and heat, by their upper surface, while what is superfluous passes off by the under. The sap thus changed assumes peculiar flavours, odours, and other qualities, and is sent by another set of vessels into the bark, to which it adds a new layer every year internally, and another layer to the external part of the wood. Hence the concentric circles in trees, the number of which shows their age, and the breadth of each circle, the abundance and vigour of the foliage which formed it. Sm. Gram. E.) The leaf of a flower is called a petal.

LEAFLET, leaflet, or little leaf (foliolum) one of the single leaves of a compound leaf.

(**LEAFLESS**, wanting leaves; which deficiency in certain plants, as *Dodder*, *Saltwort*, &c. is compensated by the peculiarly succulent nature of their stems. E.)

(**LEAF-SCALE**; see *Stipule*. E.)

LEAF-STALK: (petiolus) the foot-stalk of a leaf. It supports the leaves but not the flowers. (It is usually channelled (canaliculatus) along the upper side; is either simple, as in all simple, and some compound leaves; or compound, either once, twice, or more: and sometimes, as in the *Pea* and *Vetch* tribe, ends in tendrils. Sm. Gram. E.) In the *Great Periwinkle* the leaf-stalks are very long. Pl. 9. f. 4. (a. b. c.)

LEAFY (foliaceus) furnished with leaves.

— **CALYX** (auctus) when the base of a Calyx is surrounded by a series of leaves, different from those which form the Calyx.

— **SEED**; a seed, that is surrounded by a thin leafy edge, as in *Cow's Madnep*.

LEATHER-LIKE (coriaceus) tough and pliable like leather; e. g. the Cup of *Corn Cockle*, and most of the plants in the fifth division of the twenty-fourth Class.

LEGUMEN, or shell; a seed-vessel of two valves, wherein the seeds are fixed to one seam only; as in the *Pea*, and most of the plants in the fourth Order of the Class *Dicelphia*. It is not unusual in common language to call these Leguminous Plants. Pl. 5. f. 16.

LENTICULARRE, spherically convex on both sides: resembling the seed of a *Lentil*.

LEPROUS, rough like the skin of a leper, generally applied to express the ground or crust on which are formed the tubercles or saucers of the crustaceous *Lichens*.

LEVEL (fastigiatus) when several branches or fruit-stalks grow to equal

heights, so as to form a flat surface at the top; as in the flowers of *Sweet William*.

(LYBER, the innermost layer of the bark. E.)

LID (operculum) a cover to the Capsules of several of the Mosses; as in *Bogmoss*. Pl. 1. f. D. (b.)

LIGNOUS, woody; (sometimes applied to stems which contain a large proportion of ligneous fibre. E.)

LIGULATUS, strap-shaped, does not seem to differ from *Linearis*,* unless it is that the latter is applied to the leaves, &c. and the former used exclusively to petals.

LIMB (limbus) the upper spreading part of a petal, in blossoms composed of more than one regular petal. Thus in *Wall-flower*, the upper flat broad part of the petal is called the limb; the lower slender part included within the cup is called the claw. Pl. 4. f. 11. (b. b. b. b.) f. 12. (a. a. a. a.)

LIMBER (flaccidus) FRUIT-STALK, bending with the weight of its own flowers.

LIMBUS, the limb.

LINE (linca) the breadth of the white part at the root of the middle finger nail: about the tenth of an inch; see Measure.

LINEAR (linearis) strap-shaped.

LINEARI-CUNEIFORME, strap-wedge-shaped.

LINEARI-LANCEOLATUM, strap-spear-shaped.

LINEARI-SUBULATUM, strap-awl-shaped.

LINEATUS, streaked.

LINGUIFORME, or lingulatium; tongue-shaped.

LIP (labium) the upper or under division of a gaping blossom. The *Dead-nettle* and the greater part of the plants in the Class *Didynamia* furnish examples. See the Introduction to that Class. See also pl: 4. f. 8. f. 9. and f. 10.

(LIRELLÆ; the black letter-like receptacles in the genus *Opegrapha* of Acharius. E.)

LITTLE FRUIT-STALK (pedicellus) the little foot-stalk that supports an individual flower, when there are several flowers upon one common fruit-stalk. Pl. 6. f. 7. (a. a. a. a. a. a.)

LOBED (lobatus) divided nearly half way down, into lobes which are convex at the edges and distant from each other; as the leaves of *Ladies' Mantle* and *Water Elder*. Pl. 7. f. 19.

LOBE (lobum) the division of a lobed leaf; see Lobed. Lobes are rounded at the edges, and stand distant from each other. The leaves of *Hop*, *Anemone*, *Hepatica*, and *Sycamore*, furnish examples. Pl. 7. f. 17. f. 19.

LOCULAMENTUM, a cell.

LONG (longus) a cup is said to be long, when it is equal in length to the tube of the blossom.

LOPPED (truncatus) appearing as if cut off with a pair of scissors; the

* The BRITISH CRITIC says the terms *ligulatus* and *linearis* differ in this respect; the former is cut off at the top, and the latter is drawn to a point.

leaves of *Great Bindweed* are lopped at the base; the petals of *Periwinkle* are lopped at the end. Pl. 8. f. 63.

LU'CIDUM, transparent.

LUNA'TUM, }
LUNULA'TUM, } crescent-shaped.

LYRA'TUS, see

LYRE-SHAPED (lyratus) as the leaves of *Herb Bennet*, or Pl. 8. f. 62.

MALE (masculi) FLOWERS; are such as contain one or more *Stamens*, but no Pistils; see Barren.

MARCESCENS, shrivelling.

MARGINA'TUS, bordered.

MAS'CULI, male (flowers.)

MATTED (caespitosus) thickly interwoven together. as the fibres in turf-bogs. Sometimes also it signifies many stems rising from the same root.

MEASURES, when used to designate the size of any particular parts of plants, are generally expressed by mentioning the proportion which those parts bear to other parts, but sometimes reference is made to certain standards of measures: as

———— A HAIR'S-BREADTH, a twelfth part of a line.

———— A LINE (linea) the twelfth part of an inch, or the breadth of the white at the root of the nail of the middle finger.

———— A NAIL (unguis) about half an inch.

———— AN INCH (pollex) the breadth of the broadest part of the thumb.

———— A HAND'S-BREADTH (palmus) about three inches, or the breadth of the four fingers.

———— A SPAN (spithama) the space between the end of the thumb and the fore-finger, when extended; about seven inches.

———— PALM (dodrans) the space between the end of the thumb and the end of the little finger, when fully extended; about nine inches. This is nearly the palm of foreign nations, and is something more than a quarter of the English yard.

———— A FOOT (pes) from the outer bend of the elbow, to the lower joint of the thumb; or from the inner bend of the arm, to the second joint of the thumb; about twelve inches.

———— A CUBIT (cubitus) from the outer bend of the elbow, to the end of the middle finger; about eighteen inches, or half an English yard.

———— AN ARM (brachium) from the armpit to the base of the middle finger; about twenty-four inches, or two feet.

———— A FATHOM (orgya) about six feet, or the space between the ends of the fingers when the arms are both widely stretched out.

MEMUL'IA, pith.

(MEMBRA'NA; the finer film which in some cases lines the skin of the seed. E.)

MEMBRANACEOUS (membranaceus) thin, skinny, and semi-transparent, like parchment.

(———— LEAF; so thin that the cuticle of the one surface

appears almost closely applied to the other ; as in most trees and shrubs. E.)

MEMBRANACEOUS STEM ; when the edges of the stem are bordered with a thin leafy substance, as in *Water Figwort* and *Broad-Leaved Pea Everlasting*.

(— ^c WING ; the dilated appendage of certain seeds and seed-vessels. E.)

MENSU'RA, measure.

MID-RIB, the principal nerve which runs from the base towards the end of a leaf, along its middle.

MONADEL'PHIA, united threads or filaments ; the name of a Class in the Linnæan System ; see the Introduction to that Class.

MONAN'DRIA, one stamen ; the name of the first Class in the Linnæan System.

(**MONOCOTYLEDONOUS** ; plants with a simple, undivided Embryo ; the upper end of that organ being presumed to perform the necessary functions of a Cotyledon, with respect to air, in the earliest stage of germination. Sp. Gram. E.)

MONOE'CIA, one house ; the name of the twenty-first Class in the Linnæan System. In the plants of this Class, the Stamens and Pistils are in different flowers, but on the same plant. These plants are now distributed among the other Classes, according to the number of their Stamens.

MONOGY'NIA, one Pistil in each flower. *This circumstance characterizes an Order in several of the Classes.

MONOPET'ALA, monopetalous.

MONOPETALOUS (flower) having a blossom consisting of only one petal, as *Convulcids* or *Primrose*.

MONOPHYLL'US, one-leafed.

MONOSPER'MA, one-seeded.

MONOSTA'CHYOS, a single spike.

MOSSES (Musci.)

MOUTH (faux) the upper and opening part of the tube, in blossoms consisting of a single petal ; as *Borage*, *Hounds Tongue*, *Dead-nettle*. Pl. 4. f. 9. (d. Y.)

MUCRONA'TUM (leaf) sharp-pointed at the end. Dagger-pointed.

MULES, see Hybrid.

MULTANGULA'RIS, many-cornered.

MULTIF'IDUS, many-cleft.

MULTIF'LORES, many-flowered.

MULTILOCULA'RE, many-celled.

MULTIPARTI'TA, having many deep divisions.

MULTIVAL'VIS, many-valved ; more than two.

MURICA'TUS, set with sharp points.

MUSCI, Mosses ; the name of a natural assemblage of plants constituting the third Order of the Class Cryptogamia.

MU'TICUS, awn-less.

NAIL (unguis) see Measure.

NARROW (ligulatus) the florets in some species of compound flowers are

tubular at the bottom, but flat and narrow like a strap or fillet at the top. In *Dandelion* the florets are all narrow: in the common *Daisy* the florets in the circumference only, are narrow. Pl. 4. f. 10. f. 21. f. 24. The term *linearis* (strap-shaped) seems to convey the same idea, but has been more particularly appropriated to leaves.

NAKED (*nudus*) destitute of leaves; as the stalk of the *Tulip* or *Comslip*.

— **MOUTh**; when the mouth of the tube of a blossom is not closed by valves or hairs. The mouth of the blossom of *Borage* is closed by five valves, or teeth; but that of *Gromwell* is open and *naked*.

— **RECEPTICLE**; neither chafly nor hairy; as that of the *Daisy*.

— **LEAVES**; leaves destitute of hairs.

NAP, or **NAPPY**, see *Cottony*, from which this term does not appear to differ.

NA'TANS, floating.

NAVICULA'RIs, boat-shaped.

NECTA'RIUM, a nectary.

NECTARY, or **HONEY-CUP**, the part of a flower designed to secrete and contain honey; (Linneus has been supposed to extend the term too generally, from analogy so deeming every supernumerary part of a flower; though it must be admitted that either with or without, some such apparatus, almost every flower is more or less provided with this secretion. Jussieu appears more sceptical. The most indubitable of all Nectaries, as Sir J. E. Smith observes, are those of a glandular kind, actually secreting honey; as in the *Crucifera*, &c. The chief use of honey to the flower is supposed to be to attract insects, who in collecting it disperse the *farina* of the stamens so as to ensure fecundation. E.) In flowers that have only one petal, the tube of the blossom contains the honey; or else it is contained in a sort of horn-shaped appendage, as in *Butterwort*. In the *Violet*, *Larkspur*, *Columbine*, and *Fumitory*, it is a sort of spur or horn. In *Ranunculus*, *Lily*, and *Crown Imperial*, it is a hollow cavity in the substance of the petals. In *Daffodil* and *Hellebore* it is tubular. In *Fraxinella* and *Campanula* it is fixed to the Anthers; in *Gilliflower* and *Turnip* it is placed on the Germen in the form of a gland. Its structure is no where more singular or beautiful than in *Grass of Parnassus*. Pl. 5. f. 1. (a.) f. 2. (a. a. a. a. a.) f. 3. (a. a.) f. 4. (a.)

NEEDLE-SHAPED (*acicularis*.)

NERVO'SUM, fibrous (leaf.)

NEUTRAL flowers or florets; such as contain neither Stamens nor Pistils and of course produce no seeds.

NIDULAN'TIA (*semina*) seeds dispersed in pulp.

NITIDUS, glossy.

NODDING (*nutans*) **FLOWER**; when the fruit-stalk is bent near the end, as in *Chequered Daffodil*, *Narcissus*, and *Jonquil*. Pl. 3. f. 9. but in a smaller degree than is meant by the term *crooked*.

NO'DUS, a knot.

NOTCHED (*emarginate*, or *niched*, E.) (*emarginatus*) at the **END**; as the petals of the *Small Campion*, and *Dove's-foot Crane's-bill*; the

- little leaves of *Vetch*; the leaves of *Common Maple*. Pl. 7. f. 16. 36.
- NOTCHED** (runcinate or lion-toothed, E.) (runcinatus) **LEAVES**; the edges cut something like the teeth of a large timber saw. *Dandelion*, *Broad-leaved Watercress*, *Long-rooted Hawk's-eye*, and *Smooth Succory-Hawkweed*, are examples.
- NU'CLEUS**, a kernel.
- NU'DUS**, naked (sometimes applied to designate flowers destitute of the calyx. E.)
- NU'TANS**, nodding; but applied to a panicle more properly drooping: (sometimes rendered incumbent. E.)
- NUX**, a nut.
- NUT** (nux) a seed covered by a hard woody shell; e. g. the *Hazel Nut*. This woody shell is sometimes covered by a soft pulpy or fleshy substance, as in a *Peach* or *Apricot*, and then it is called a stone. Pl. 5. f. 21. (b. b.)
- OB**, inversely; thus
- OB-CO'NICUM**, signifies inversely conical.
- OB-CORDA'TUM**, inversely heart-shaped; which see.
- OBLI'QUUS**, slanting, (oblique, or twisted, as is the position of some leaves. E.)
- OBLONG** (oblongus) considerably longer than broad, and narrowed, though rounded at the ends; as the leaves of the *Daisy*; the anthers of *Honeysuckle*. Pl. 7. f. 5.
- OBLONGIUS'CUS**, rather oblong.
- OBLON'GO-OVA'TUM**, oblong-egg-shaped.
- OBLONG-EGG-SHAPED**, oblong at the base, but egg-shaped towards the end.
- OB-OVA'TUM**, inversely egg-shaped; that is, egg-shaped, but with the small end downwards.
- OBSOLE'TUS**, indistinct.
- OBTU'SUS**, blunt.
- OBTUSIUS'CUS**, bluntish.
- OCTAN'DRIA**, eight-stamened. The name of a Class.
- OCTOFIDUS**, eight-cleft.
- OCTOGY'NIA**, eight Pistils; the name of some of the Linnæan Orders.
- OCTO-PARTI'TUS**, having eight divisions.
- OPEN** (patulus) standing open, or spreading wide.
- OPERCULA'TUM**, covered with a lid.
- OPERCULUM**, a lid.
- OPPOSITE** (oppositus) growing on the opposite sides of the stem, but at the same height from the ground, as the leaves of the *Nettle*. In Pl. 9. f. 5. all the leaves are opposite.
- OPPOS'ITIFOLIUM**, opposite the leaf.
- OPPOS'ITUS**, opposite.
- ORBICULA'TUS**, round and flat.
- OR'DO**, order; see the Introduction.
- OS** (periathii) the rim of the cup.
- ORGY'A**, a fathom.
- OS'SEUS**, hard as bone.

OVAL (ovale) leaf; as the leaves of *Box*. Pl. 7. f. 4.

OVA'TO-LANCEOLA'TUM, egg-spear-shaped.

OVA'TO-OBLONGUM, egg-shaped, but lengthened out towards the end.

OVA'TO-SUBULA'TA (capsule) egg-awl-shaped. That is, egg-shaped at the base, but tapering into awl-shaped towards the other extremity.

PAGI'NA, the surface of a leaf.

PAIRS (binatus: geminus) leaves, or fruit-stalks, sometimes grow in pairs. Pl. 7. f. 50. See also *Juga*.

PALATE (palatum) the inner part of the mouth of gaping blossoms.

Pl. 4. f. 10. (c.) It is frequently closed, or nearly so, by a projecting plait of the lower lip; this part is called the palate.

Pl. 4. f. 10. (c.)

PALE'A, chaff.

PALBA'CEUS, chaffy: (which see; as applied to the Receptacle, Flower, or Husk. E.)

PALM (dodrans) see *Measurc.*

PALMA'TUS, hand-shaped.

PAL'MUS, hand's-breadth.

PANDURIFORMIS, fiddle-shaped.

PANICLE (panicula) an assemblage of flowers growing without any very regular order, upon fruit-stalks which are variously subdivided; e. g. *Oats*. Pl. 6. f. 6. It is said to be

—— SPREADING; (or lax, diffusa. E.) when the partial fruit-stalks diverge and stand wide asunder, as in *Common* and *Reed Meadow-grass*.

—— COMPACT; (dense, coarctata. E.) when they stand near together, as in *Sheep's Fescue* and *Purple Hairgrass*.

PANICLED (paniculatus) BUNCH; an assemblage of flowers partaking the properties of a panicle and a bunch. See those terms. *Golden Rod* may serve as an example.

—— SPIKE; an assemblage of flowers partaking the properties of a panicle and a spike; as *Wall Fescue* and *Manured Canary-Grass*; in which the collections of florets resemble a spike in their general appearance, but are furnished with fruit-stalks, shorter than themselves.

PAPILIONA'CEUS, butterfly-shaped.

PAPILLO'SUS, pimpled.

PAP'PUS, down.

PARALLEL'US, parallel.

PARASITICAL (parasiticus) PLANTS; not taking root in the earth, but growing upon other vegetables. Thus *Mistletoe* is found to grow upon the Apple Tree, the Pear, Lime, Elm, Poplar, Hawthorn, and Buckthorn, but never upon the ground: (*Dodder* upon Heath, Gorse, &c.; many *Lichens* and *Mosses*; with numerous *Fungi* follow the same habit. E.)

PARTIAL (partialis) expressive of a part, not of the whole. Thus the Umbellules, or small Umbels, composing a large Umbel, are sometimes called partial Umbels; and the Involucellum or fence at the base of these partial Umbels, is sometimes called the partial Involucre. See pl. 6. f. 9. (d. d. d. d.)

- PARTITION** (dissepimentum) the substance dividing seed-vessels into different cells. Thus the seed-vessel of *Jacob's Ladder* is divided into three cells; and if you cut a Lemon across, you will plainly see the partitions that divide it into nine cells. See also pl. 5. f. 12. (b. b.) f. 14. (b. b. b. b.)
- PARTI'TUS**, divided.
- PA'TENS**, expanding; (spreading a little. E.)
- PAT'ULUS**, open, (a higher degree of the preceding; fully expanded; spreading wide. E.)
- PECTINA'TUM**, comb-like, (leaf.)
- PEDA'TUM**, bird-footed.
- PEDICELL'US**, a little fruit-stalk or pedicle.
- PEDICLE**, a little fruit-stalk, or partial fruit-stalk, being that part of a compound or branched fruit-stalk, which is the immediate support of a single flower or floret, or spiket. Is is also sometimes used to express the little pillar which supports the down in some of the compound flowers; (as likewise for the fruit-stalk elevating the German and fruitin *Mosses*, and some other plants: in such instances it is the *Bacillum* or *Podetium* of *Acharius*. E.)
- PEDUNCULA'TUS**, growing on a fruit-stalk, opposed to sitting or sessile.
- PEDUN'GULUS**, a fruit-stalk, or peduncle.
- (PELLI'GULA: the pellicle. E.)
- (**PELLICLE**, (pellicula) the epidermis, or covering which closely adheres to the outside of some seeds. E.)
- PEL'TA**, a target.
- PELTA'TUM**, target-shaped (leaf, &c.): (peltate. E.)
- PENCIL-SHAPED** (penicilliformis) like a camel-hair pencil; as the summits of *Mille*, or the appendages to the blossoms of *Meadow Milk-wort*. Pl. 2. f. 11. (c. c.)
- PENICILLIFORMIS**, pencil-shaped.
- PENDANT** (pendulus) hanging down; as bunches of *Red Currant*; the cones of *Scotch Fir*; the flowers of *Columbine*.
- PENTAG'ONUS**, five-cornered.
- PENTAGY'NIA**, five Pistils; the name of an Order in several of the Classes.
- PENTAN'DRIA**, five-stamened; the name of one of the Classes.
- PENTAPET'ALA**, five petaled.
- PENTAPHYL'US**, five-leaved (cup.)
- PERENNIAL** (perennis) continuing for several years; at least more than two (as applied to plants, or roots; sum'larly exemplified in *Brook-line*, *Woody Night-shade*, or *Creeping Thistle*. E.)
- PERFECT** (completus) FLOWER, having both a cup and a blossom; and also one or more Stamens or Pistils.
- PERFORATED** (perfoliatus) LEAVES: when the stem seems to penetrate the leaves; as in *Round-leaved Thoroughwax*. Pl. 9. f. 4. (g.)
- PERFOLIA'TUM**, perforated (leaf.)
- PERIANTH'IUM**, the cup, (of a flower which may be single or double; superior, intermediate, or inferior, to the Germen. E.)
- PERICARP'UM**, a seed-vessel.

PERICHÆTUM, an Involucrum or scaly sheath surrounding the base of the fruit-stalk in *Mosses*.

(**PERIDIUM**; the membranous, dry case of the seeds in the Fungi *Angiocarpi* of Persoon. E.)

(**PERISTOMA**, or **PERISTOMIUM**, the fringe which borders the orifice of the Capsule of *Mosses*. It may be either simple or double; and consists either of separate teeth, or of a plaited and jagged membrane. The external fringe is mostly of the former kind; the inner, when present, of the latter. Sm. *Introductio*. E.) Pl. 14. f. 27. (a.)

PERMANENT (persistens) CUP; remaining till the fruit is ripe; as in *Borage*, *Currant*, *Pink*, and *Dead-nettle*.

PERSISTENS, permanent.

(**PERSONATUS**, (blossom:) personate; irregular and closed by a kind of palate, as in *Snappedragon*. Sm. E.)

PES, a foot; see **MEASURE**.

PETALIFORMIS, resembling a petal.

PETALS (petala) the leaves which constitute the blossom are called Petals, to distinguish them from the other leaves of the plant. (They are in most instances variously coloured, often fragrant, and frequently nectariferous, even without a Nectary. E.) See pl. 3. f. 2. (a. a. a. a. a. a.) Pl. 4. f. 12. (a. a. a. a.)

PETIOLARIS, fixed to the leaf-stalk.

PETIOLATUS, having leaf-stalks.

(**PETIOLUS**, a leaf-stalk, foot-stalk, or petiole. E.)

(**PHÆNOGAMIC**, such plants as have evident flowers, constructed according to the analogy of plants in general; a term used in contradistinction to *Cryptogamic*. E.)

PILUS, or Cap; the spreading part which forms the top of several of the Fungi, and covers the fructifications. Thus in the *Common Mushroom* it covers the gills, and is sometimes also called the Hat, and, when fully expanded, the Flap.

(**PILI**, hairs: simple or compound. E.)

PILOSUS, hairy.

PILLAR (stipes) the little shaft or pedicle upon which the down of some seeds is placed, as in *Baydclion*. Pl. 1. f. H. (b.) Pl. 4. f. 22. (i.) Pl. 6. f. 2. (d.) *Stipes* is also used to express the stem of an *Agaric*, &c.

PIMPLED (papillosus) beset with pimples, or hard little protuberances.

PINNA, a leaflet of a winged leaf.

PINNATIFIDUS, having winged clefts.

PINNATUS, winged, LEAF: whereas *alatus* relates to the STEM, or LEAF-STALK.

PINNULATUS, when a leaflet of a winged leaf is again subdivided.

(**PISTIL**, or **POINTAL**; an essential part of a flower, (sometimes in a separate flower from that containing the Stamens, composed of the **GERMEN**, or **SEED-BUD**, the **STYLE**, one or more, but not always present; and the **SUMMIT** or **STIGMA**. E.) Look into the blossom of a *Plum* or *Cherry*, and in the centre you will see the Pistils surrounded by the Stamens. In the blossom of the *Apple* or *Pear*, you

will perceive five Pistils in the centre. In *Dead-nettle* you will find the Pistil covered by the upper lip, and forked at the top. In the centre of the blossom of the *White Lily*, the pistil stands surrounded by six Stamens. In this flower the GERMEN, which is the lower part of the Pistil, is long, cylindrical, and marked with six furrows; next above this part is the STYLE, which is long and cylindrical; and, at the top of the Style is the SUMMIT, which is thick, and triangular. See pl. 3. f. 2. (*d. e. f.*) f. 7. (*i. k. l.*) f. 5. (*c. d. e.*)

PISTILLIFEROUS flowers or florets, such as contain one or more Pistils, but no Stamens.

(PITCHER, see *Ascidium*. E.)

PITCHER-SHAPED (*urceolatus*) swelling or bulging out like a common jug.

PITHY (*inanis*) soft and spongy.

(PITH (*medulla*) a light, compressible, spongy, whitish substance, filling a larger or smaller cavity in the centre of the wood; copious in *Elder*, the *Rush*, &c. Various theories have been entertained as to its nature and functions. Sir J. E. Smith inclines to consider it as "a reservoir of vital energy." Mr. Lindsay has demonstrated that in the *Sensitive Plant* it is the seat of irritability: while Mr. Knight proves experimentally that the branch of a vine, from which more than an inch of the pith had been abstracted, did not suffer materially. E.)

PITTED (*lacunosum*) when the surface of a leaf lies in hollows between the veins.

PLAIED (*plicatus*) folded in plaits; as the blossom of *Convolvulus*; the cup of *Thrift*; and the leaves of *Ladies' Mantle*. Pl. 7. f. 37.

PLANUS, flat.

(PLENUS (*flos*) a double-blossomed flower: occasioned by the stamens, and sometimes the pistils being transformed to supernumerary petals, by cultivation or excessive nourishment: a metamorphosis to which plants with numerous stamens, as *Ranunculus*, *Anemone*, *Peony*, &c. are especially prone. E.)

PLICATUS, plaited.

PLUMOSUS, feathered.

PLUMULA, the bud of the stem or herbage which arises from the Embryo or Corculum. E.)

POD (*siliqua*) a seed-vessel of two valves, within which the seeds are fixed alternately to each stem. When long, it is called a long pod, as in *Gilliflower*; when broad and short, it is called a short pod, or pouch, as in *Honesty* and *Shepherd's Purse*. Pl. 5. f. 10. f. 11. f. 12. f. 13.

(PODE'RUM; vid. *Pedicle*. E.)

POINTAL, see Pistil.

POINTING, from two opposite Lines. See *Two-rowed*.

———— one WAY (*secundus*) as the Flowers of *Foxglove*, *Cock's-foot*, and *Sheep's Fescue Grass*. Pl. 2. f. 13. (*gl.*)

POLLEN, Farina, or Dust, a fine powder contained in the Anthers of flowers, (bursting on the application of moisture, and discharging an elastic vapour. E.) It is too minute for the naked eye to

examine, but by the assistance of a microscope, it appears very different in different plants: thus in *Bloody Geranium* it is a perforated globule; in *Marsh-mallow* like the wheel of a watch; in *Pansy* it is triangular; in *Narcissus* kidney-shaped; and in *Comfrey* the globules are double. Pl. 3. f. 5. (f.) An Anther discharging its pollen; f. 8. a particle of the pollen greatly magnified.

POL'LEX, an inch; see Measure.

POLYADELPH'IA, Stamens in three or more sets, being united by the filaments. The title of a Class, which see.

POLYAN'DRIA, many stamens. The title of a Class, which see.

POLYGA'MIA, the title of the twenty-third Class in the Linnæan System. The plants it contained are now distributed amongst the other Classes according to the number of the Stamens.

POLYGA'MIA-NECESSA'RIA, the title of the fourth Order of the Class SYNGENESIA. See Introduction to that Class, as also for

————— AQUA'LIS.

————— SUPER'FLUA.

————— FRUSTRA'NEA.

————— and SEGREGA'TA.

POLYPET'ALUS, many-petaled, (flower,) having more than one petal.

POLYPHY'LUS, many-leaved, (calyx, &c.) of more than one leaf.

POLYSPER'MA, many-seeded.

POLYSTA'CHIUS, many-spiked.

PO'MUM, a fleshy or pulpy seed-vessel without valves, covering a Capsule which contains the seeds; as in the Apple and Pear. Pl. 5. f. 20.

PORES (pori) little holes. At the inner side of the base of the petals, in all the species of *Ranunculus* or *Crowfoot*, are little pores filled with honey. See also pl. 3. f. 3. (k.)

POS'TICUS, the hinder part.

POUCH, a short pod; see Pod.

(PRÆMOR'SA (radix) an abrupt root. E.)

PRÆMOR'SUS, as if bitten off.

PRESSED TO (adpressus) see Contiguous.

(PRICKLES (aculei) sharp-pointed, rigid, processes formed from the bark, and not from the woody part of a plant: they therefore do not adhere firmly, but come off with the bark of the parts on which they are seated; neither do they disappear by culture, as thorns are wont to do. The prickles of the *Rose* afford a familiar example. Pl. 10. f. 2. (a. a.) and (b. b.) Prickles in general are laterally compressed, and either straight, curved, spiral, simple or compound, as they have one or more points; sometimes in pairs, but oftener solitary; or, as in *Barberry*, palmated, several together. E.)

PRICKLY (aculeatus) armed with prickles.

PRICKLY-POINTED (cuspidatus) ending suddenly in a hard sharp point.

PRISMAT'ICUS, see

PRISM-SHAPED (prismaticus) differing from cylindrical in the circumference being angular, as the cup of the *Pulmonaria*.

(PROCUM'BENS, trailing, procumbent, lying altogether flat on the ground, as do the stems of many plants. E.)

PROLIFEROUS (*proliferi flores*) **BLOSSOMS**; when one grows out of another, as is not uncommon in the *Polygonthus*, (or in the manner of the *Hen* and *Chickens Daisy*. E.)

PROLIFEROUS-SHOOTS; when one shoot springs out of another, as in *Hypnum proliferum*.

———— **STEM**; when an otherwise unbranched stem sends out number of branches from its top.

(———— **LEAVES**; throwing out roots and producing other plants resembling the plant to which they belong. E.)

PROMINENS, projecting (partition) when standing out beyond the valves.

PROMINENT (*prominens*) the partition of a seed-vessel is said to be prominent when it projects beyond the valves, as in *Cabbage*, and many other plants of the *Tetradynamia* Class.

PRO'NUS, the under surface of a leaf.

(**PROPA'GO**: a species of *hybernaculum*, defined by Gærtner as a simple leafless, polymorphous, or variously shaped, germ, in some instances naked, in others enclosed in a cortical sheath, which spontaneously separates from the parent, and is scattered in the manner of seed. E.)

PRO'PRIUS, belonging to an individual.

PROPS (*fulcra*) these appendages are of seven kinds, viz. *Stipulæ*, *Floral-leaves*, *Thorns*, *Prickles*, *Tendrils*, *Glands*, and *Hairs*. See those *Terms*. (Some authors prefer the term *Appendage*, as more generally applicable to these parts: Mr. Thomson confines the word *Fulcra* to those organs by which climbing and weak flexible stems attach themselves for support, as the *Tendril*, the *Claw*, the *Hook*, and the *Bladder*; the latter included as giving buoyancy or support to certain aquatic plants. E.)

(**PROSTRA'TUS**, *prostrate*; as a stem lying flat, and spreading over the ground. E.)

PROTRUDING (*exsertus*) standing out of the blossom as do the *Stamens* of some of the *Ericæ*.

(**PROTUBERATED**, (*torosus*) seed-vessels; an appearance occasioned the irregular swelling of the enclosed seeds: sufficiently evident in the pods of *Mustard*, and in some sorts of *Beans*. E.)

Pu'BLIS, cloathing.

PUBESCENT (*pubescens*) clothed with soft wool or hair (this varies greatly in degree according to soil or exposure; but the *direction* of the hairs or bristles on some occasions gives a sure mean of distinguishing species. In the genus *Mentha* (*Mint*) it is the only infallible distinction: and not less so in *Myosotis*, (*Scorpion Grass*.) Sm. *Introd.* E.)

PULPO'SUS, pulpy.

PULPY (*pulposus*) soft and tenacious. (Fruits of this description, serving as food for various animals, are often propagated by passing uninjured through the intestines, and are thus remotely deposited. E.)

A *Cherry* is pulpy, but an *Apple* is fleshy.

———— **SEED-VESSEL**, see *Drupa*.

PULVERA'TUS, dusted.

PUNCTA'TUS, dotted.

PURSE-SHAPEN, (scrotiformis) like a purse that draws together with strings at the top; as the seed-vessel of *Purple Marshlocks*, or the Nectary of *Salycion*.

QUADRANGULA'RIS, four-cornered, (stem.)

QUADRIDENTA'TUS, four-toothed.

QUADRIFIDUS, four-clefted.

QUADRILLO'BUM, four-lobed.

QUADRILOCULA'RE, four-celled.

QUADRIPARTI'TUM, with four divisions.

QUADRIVALVE, four-valved.

QUATER'NA, by fours; as the leaves *Pl. 9. f. 3. (c. c.)*

QUINA, by fives.

QUINA'TUM, five-leaved.

QUINQUANGULA'RE, five-cornered.

QUINQUEFIDUM, five-clefted.

QUINQUELO'BUM, five-lobed.

QUINQUELOCULA'RE, five-celled.

QUINQUEPARTI'TUM, with five divisions.

QUINQUEVALVE, five-valved.

RACE'MUS, a bunch, (or cluster, consisting of scattered flowers. *E.*)

RA'CHIS, a spike-stalk.

RADIATE (radius) a sort of compound flowers in which the florets of the centre differ in form from those in the circumference. Thus the *Daisy* and *Sunflower* are radiate flowers; the florets in the centre being all tubular, but those in the circumference are narrow or strap-shaped.—*Pl. 4. f. 24.* Umbelliferous flowers are also called radiated when the florets in the circumference of the Umbel or Umbellule are larger than those in the centre. In this case too, the outer petals are larger than the inner petals of the same floret.

———— SUMMITS, placed in a circle; as in the *Poppy*. *Pl. 5. f. 5.*

(6.)

RADICALIS (radical; as the leaves of stemless plants: exemplified in the *Dwarf Thistle*, &c. *E.*) issuing immediately from the root.

RADICANS, striking root: (sometimes referring to plants whose fibres cling to extraneous bodies for support, without deriving nourishment therefrom, as *Ivy*. *E.*)

(RADICULÆ, fibres; the absorbing organs of the root. *E.*)

(RADICLE, (radicula.) *E.*)

RA'DII, rays; the outer florets in a radiate compound flower. They may be called the florets of the circumference, and the inner ones the central florets.

———— SPOKES, the fruit-stalks of an Umbel or Umbellule; which see.

(RA'TEX, root: of trees and shrubs ligneous; of herbaceous plants fleshy; and forming the descending appendage by which a plant is nourished, and fixed in the earth. *E.*)

RA'MEUS, belonging to a branch.

(RA'MEUM, folium, a branch-leaf. *E.*)

RAMO'SUS, branched, (when particularly applied to stems, they may be either branched dichotomously, alternately, oppositely, verticillately, abruptly, jointed, two-ranked, four-ranked, and twining or turning

spirally ; to the right in some plants, to the left in others, invariably. Sm. Gram. E.)

RAMOSIS/SIMUS, very much branched.

RA'MUS, a branch.

RAMULUS, the branch of a branch.

RECEPTACLE (receptaculum) (apothecium, of certain Algæ of Acharius.

E.) one of the parts necessary to compose a flower. It is the base, or seat, upon which the other parts are placed. Pl. 4. f. 11. (c.) f. 23. (a.) (In compound flowers the character of the Receptacle affords generic distinctions. E.) The inner part of a Capsule to which the seeds are attached is also called a Receptacle. Pl. 5. f. 7. f. 9.

RECLINA'TUS, reclining.

RECLINING (reclinatus) bent back a little, so that the extremity is lower than the base ; as the leaves in Pl. 9. f. 5. (e. e.) (curved towards the ground ; as the stem of the *Bramble*. E.)

RECTUS, straight.

RECURVA'TUS, recurved, or bowed back.

REFLECTED, or **REFLEXED**, (reflexus) bent back, rather angularly ; as the segments of the cup of the *Currant* ; the petals of the *Flower de Luce* ; the blossoms of the *Hyacinth* and *White Lily*. Pl. 4. f. 5.

REFRACTUS, bent back as if broken.

REGULAR (regularis) **BLOSSOM** ; one that is regular in the figure, size, and proportion of its parts ; as *Jasmine* and *Syringa*.

REMOTE (remotus) **WHIRLS** ; when there is a considerable length of stem between each whirl. Pl. 6. f. 11. (a. a. a.)

RENIFORMIS, kidney-shaped.

REPANDUM, serpentine.

REPENS,

REP'TANS, } creeping (as a stem, or root. E.)

(**REPLICA'TUS**, folded or plaited, so as to form a groove or channel ; as in the legumen of *Astragalus hypoglottis*, *Purple Mountain Milk-wort*. E.)

RESUPINA'TUM, horizontally turned upside down.

RETICULA'TA, veined like net-work.

RETROFRACTUS, broken back.

RETRORSUM (sinuatum) crookedly bent back.

———— (serratum) inversely serrated.

RETUSUM, bluntly notched at the end ; but it sometimes means merely blunt, as the seeds of the *Lycops*s, *Rugloss*.

(**REVERSED** (riversus) the upper surface turned downward, as is the position of some leaves. E.)

REVOLUTUS, rolled back.

RHOMBEUS, diamond-shaped.

RHOMBOIDEUS (rhomboidal) nearly diamond-shaped, but broader one way than the other.

(**RIBBED** (costatum.) E.)

RIGID (rigidus) inflexible ; not easily bending ; opposed to limber and flexible.

RIMO'SUS, full of cracks.

RING (anulus) the remains of the Curtain surrounding the Stem of an

- Agaric* or *Boletus*, after the other part has disappeared. Pl. 1. f. H. (a.)
- RIN'GENS, gaping (blossom; ringent; irregular and gaping like the mouth of an animal, as in *Dead-nettle*; called by former Botanists *labiata*, lipped. Sm. E.)
- RISING, upwards (assurgens) differs from ascending, in first inclining downwards, and then gradually rising upwards.
- ROD-SHAPED (virgatus) having many slender, and nearly straight parallel branches or shoots.
- ROLLED BACK (revolutus) with respect to the leaf in general, rolled downwards, as the ends of the leaves of *Sweet William*; pl. 9. f. 5. (f. f.) with respect to the edges, rolled under toward the rib of the leaf, as in the leaves of *Rosemary*, and the young leaves of the *Osier*; with respect to Summits, it signifies rolled back spirally, as are those of the *Pink*. Pl. 1. f. 19. (c. c.)
- ROOT (radix) may be Fibrous, Bulbous, Tuberous, Bundled, Beaded, or Jointed, Spindle-shaped, or Creeping. See those terms. See also pl. 11. (and Annual, Biennial, or Perennial. E.)
- ROOT-LEAVES (radicalia) the leaves which proceed immediately from the root, without the intervention of a stem. They often differ in shape and size from the other leaves. The *Field Bellflower* furnishes an example. Pl. 9. f. 7.
- ROSTEL'UM, the descending part of the heart or corcle of a seed.
- ROSTRA'TUM, having a bill.
- ROS'TRUM, a bill, or peak.
- ROTA'TA, wheel-shaped, (blossom.)
- ROUGH, (asper.)
- ROUND (globosus) like a ball; see Globular.
- (orbicularis) round and flat. Pl. 7. f. 1.
- (—— (teres) columnar. E.)
- RUFFLE, or RING; the part of the Curtain of an Agaric which adheres to the Stem after the outer part of it has vanished.
- RUGO'SUM, wrinkled.
- RUNCINA'TUM, notched; (runcinate, or lion-toothed; cut into several transverse acute segments, pointing backwards, as the leaves of *Dandelion*. Sm. E.)
- RUNDLE, see Umbel.
- RUNDLET, see Umbellule.
- RUNNER (flagellum, sarmentum) a barren twig or shoot, lying upon the ground, as in the *Garden Strawberry*, and *Stone Bramble*.—They are sometimes called Wires.
- RUNNING (along the stem) see Decurrent.
- SAGITA'TUS, arrow-shaped.
- SALVER-SHAPED (hypocrateriformis) the shape of a blossom of one petal, the lower part of which is tubular, the upper part flat and expanded; as the blossom of *Periwinkle*, and *Mouse-ear Scorpion Grass*. Pl. 4. f. 1.
- (SAMA'RA, a kind of capsule compressed and dry, usually of two cells, without valves, and often winged, as exemplified in *Acer*, *Maple*. E.)
- SAP, see Alburnum, and Juice.

(**SAP-VESSELS**; the vascular system of plants, and the nature of the propulsion of the sap through their stems and branches, has been greatly elucidated by Mr. Knight; (in Phil. Trans.) who has proved that the spiral vessels, (coating the longitudinal tubes which surround the centre or pith of young stems and branches, hitherto supposed to be air-vessels,) are the proper sap-vessels, or absorbents by which the plant is nourished. The necessary fluids being absorbed by the root and become sap, are carried up into the leaves by these vessels, a particular set being appropriated to each leaf from the main channels that pass along the alburnum: by the leaves the sap is exposed to light, air, and moisture, and thus elaborated into various secretions. Mr. Thomson suggests that the water, the acetate of potash, and the carbonate of lime, are taken up from the soil, and enter as general constituents into the composition of sap; but the mucilage, the sugar, the extractive, the gallic acid, the tannin, &c. are produced by the vegetable system itself, and must, therefore, vary in different plants. Sir J. E. Smith compares the sap-vessels (comprehending the common tubes of the alburnum, and the central vessels of Mr. Knight) to the stomach, lacteals, and arteries of the animal economy, all in one: and conjectures that the powerful agency by which the sap is conveyed to the higher branches of tall trees, may be the spiral form of the vessels, the stimulus of heat, the action of winds, and the susceptible shining plates called silver-grain. E.)

SARMENTOSUS, having runners, or trailing.

(**SARMENTUM**, or **FLAGELLUM**, a runner thrown out from the root for the purpose of increase. E.)

SAUCER (scutellum) a sort of fructification of some of the Lichens, it is circular and concave, like a china saucer. Pl. 1. f. F.

SCABER, rough like a file.

SCABRITIES, roughness.

SCALY (squalinosus) like the skin of a fish; as the cups of *Burdock*.

Pl. 4. f. 25. (a.) (or the bulbous root of the *White Lily*. In *Toothwort*, and other plants nearly destitute of rootlets, the fleshy scales are conjectured to be reservoirs of nutriment. E.)

SCANDENS, climbing.

SCAPUS, a stalk, such as supports the flower, but not the leaves of a plant, and rises immediately from the root; as in *Narcissus*, *Hyacinth*, &c. Pl. 6. f. 4.

SCARIOUS, skinny.

SCARRED (cicatriscatus) marked with scars where the leaves have fallen off, as are the stems of some *Spurges*.

SCROBIFORMIS, like fine saw-dust, as are the seeds of *Orchis*.

SCROTIFORMIS, purse-shaped.

SCOLLOPED (crenate, crenatus) inspect the edges of the leaves of *Bird's-eye* and *Gill*, and you will have a true idea of this term; see also Pl. 7. f. 38. 35. and 34. Some leaves are doubly scolloped, as in Pl. 7. f. 33.

SCORED (striatus) marked with superficial parallel lines, as the cup of a *Pink*, or the stems of *Butcher's Broom*.

SCURFY (*squarrosus*) applied to a cup in compound flowers, the scales of which are bent outwards at the ends, so as to give the whole a rough ragged appearance.

SCUTELLUM, a saucer.

SCYMETAR-SHAPED leaf, (*acinaciforme*) a long fleshy leaf, thick and straight at one edge, thin and arched at the other.

SCYPHIFER, glass-shaped; as is the fructification of some *Lichens*.

SEA-GREEN, see *Glaucous*.

SEAM (*sutura*) the line formed by the union of the valves of a seed-vessel. Thus the pod of a *Pea* is a seed-vessel of two valves, and the two seams where the valves join are sufficiently conspicuous; as also in pl. 5. f. 6.

SECUNDUS, pointing one way.

SECURIFORMIS, shaped like an axe.

SEED (*semen*) a deciduous part of a vegetable, containing the rudiments of a new plant. It consists of the Heart, the Seed-lobes, the Eye, and the Seed-coat. See those terms. Sometimes it is crowned with the cup of the flower, and sometimes it is winged with down, or with a thin expanded membrane, which enables the wind to waft it abroad. See pl. 4. f. 22. and pl. 6. f. 3.

SEED-BUD, see *Germen*.

SEED-COAT, or **TUNIC**, (*arillus*) the proper coat of a seed which falls off spontaneously. It is remarkable in the *Spindle-tree*, *Hound's Tongue*, *Cucumber*, *Fraxinella*, and *Mallow*.—Some seeds have only a dry covering or skin, as the *Bean*. Pl. 6. f. 1. (c. c.)

SEED-COVER (*calyculus*) the real cover of the seed.

SEED-LEAVES, see *Seminal-leaves*.

(**SEED-LOBES** (*cotyledones*) the perishable parts of a seed closely attached to the Embryo, and designed to afford nourishment to the young plant when it first begins to expand, their cells containing a large portion of farinaceous matter, which becomes saccharine during the germination of the seed. They furnish the *Seminal-leaves*. A *Bean*, after being soaked in water, or moist earth, easily parts with its external skin, and divides into two parts, called the *Seed-lobes*. Pl. 6. f. (a. a.) E.)

SEED-VESSEL, (*pericarpium*) a vessel to contain the seed (formed of the enlarged germen. E.) It is of several kinds; as a *Capsule*; a *Pod*; a *Legumen*; an *Air-bag*; a *Drupa*, including a nut or stone; a *Pomum*; a *Berry*; and a *Cone*. See those terms. See also pl. 5. from f. 5. to f. 21.

SEGMENT (*lacinium*) the small parts of a leaf, cup, or petal, included between the incisions.

SEGREGATA (*polygamia*.) See the Introduction to the Class *Syngenesia*.

SE'MEN, seed.

SEMI-AMPLEXICAULIA, half, or in part only embracing the stem.

SEMI-CYLINDRICAL, (*semi-teres*) if the trunk of a tree was sawed lengthwise through the middle, each part would be semi-cylindrical. The stalk of *Ranunculus* is in this shape.

SEMI-FLOSCULOSI, a term used to express such compound flowers of the Class *Syngenesia* as are wholly composed of strap-shaped florets.

(SEMINAL-LEAVES, (folium seminale) those which arise immediately from a seed, or rather from the seed-lobes, are of temporary duration, and perform the functions of leaves until the real leaves appear, when they drop off. E.)

SEMI-ORBITALUM, in the shape of half a globe.

SEMI-SAGITATA, shaped like half the head of an arrow, as are the Stipulae of some plants.

SEMI-TERRES, semi-cylindrical.

SEMPERVIRENS, evergreen.

SENIS (foliis) growing in sixes.

SEPARATE (Monoecia) Stamens and Pistils are said to be separate when they are found upon the same plant, but in different flowers. Thus in *Bor*, *Birch*, *Cucumber*, and *Melon*, some of the flowers contain Stamens, and others Pistils; but none of them have both together. Pl. 1. f. 21.

SERICEUS, silky.

SERPENTINE (repandus) the edge of some leaves formed like a serpentine line; without any angles or corners. Pl. 7. f. 29.

SERRATED (serratus) like the teeth of a common saw; as are the edges of the leaves of the *Apple*, *Pear*, *Spearmint*, *Dead-nettle*, *Sneezewort*, or *Goose-tongue*, &c. Pl. 7. f. 31. Some leaves are DOUBLY-SERRATED; that is, the teeth are again cut into other little teeth. The *Common Elm* is an example. Pl. 7. f. 32.

SERRULATED (serrulatum) very minutely serrated.

SESILIS, sitting or sessile; (having no stalk, as applicable to the insertion of leaves; to flowers, &c. E.)

SETACEUS, bristle-shaped.

(SETÆ, bristles, hollow tubes, rigid, sharp-pointed, but partaking more of the nature of hairs than of prickles; they are either simple, and awl-shaped or spindle-shaped; or compound, and forked or fasciculated, the latter kind consisting of a number of straight bristles diverging from a papillary knob. E.)

SETOSUS, bristly, or set with bristles.

SEXANGULARE, six-sided, or cornered.

SEX-FIDUS, six cleft.

SEX-LOCULARE, six-celled.

SHAFT, see Style.

SHAGGY, (hirsutus) rough with stiff hairs.

SHARP, see Acute.

SHARP-POINTED (mucronatum) tapering into a hard sharp point.

SHEATH (spatha) a species of Calyx, (bursting longitudinally, and finally becoming, for the most part, membranous. By some authors it is considered a modification of the bractea. E.) exemplified in the *Crocus*, *Iris*, and *Daffodil*. Pl. 3. f. 9. (a. a.) See also the Introduction.

SHEATHED FRUIT-STALK (spadix) one that is furnished with a sheath. Pl. 3. f. 9. (d.)

SHEATH-SCALE, a membrane found at the top of the sheaths which surround the stem of Grasses, just where the sheath ends, and the proper leaf begins. It is generally white; tender and brittle when dry.

SHEATHING (vaginans) **LEAVES**; when the base of a leaf enfolds the stem; as in most of the *Grasses*. Pl. 9. f. 4. (i.)

SHEDDING (caducus) continuing but a short time. Applied to a Calyx, it signifies that it falls off before the blossom; as in *Poppy*.

SHELL, see Legumen.

SHOOT (surculus) the branch of a *Moss*.

SHORT (abbreviatus) a cup is said to be short, when it is shorter than the tube of the blossom, as in pl. 4. f. 7. (c.)

SHRIVELLING (marcescens) fading and withered, but not falling off: e. g. the blossoms of *Plantain* and *Stitchwort*.

SHRUBBY (fruticosus) somewhat woody and perennial, as the stems of a *Rose-tree*.

SILICULA, a broad and short pod, or pouch.

SILICULO'SA, the name of the first Order of the *Tetradynamia* Class, containing the plants with a broad short pod, or pouch.

SIL/IQUA, a pod, or more particularly a long pod.

SILIQUO'SA, the second Order of the Class *Tetradynamia*, containing the plants whose seed-vessel is a long pod.

SILKY (sericeus) set with very soft hairs lying close, so as hardly to be felt.

(**SILVER-GRAIN**: thin shining plates, (visible in oak wood) which, pressing upon the sap-vessels, and being highly susceptible, Mr. Knight considers as materially aiding the ascent of the sap, through the alburnum of the trunk or chief branches; where the spiral coats of the vessels are either wanting, or less elastic than in the leaf-stalks and summits of the more tender shoots. E.)

SIMPLE (simplex) undivided.

—— **STEM**; one that is undivided, or only sending out small branches.

—— **LEAF**; when there is only one upon a leaf-stalk.

—— **CUP**; one that consists of a single series of segments; e. g. *Goat's-head*.

STALK; undivided, as the stalk of the *Tulip*, and that of *Thrift*.

(—— **HAIRS**; (pili simplices) often a slender, jointed, flexible thread more or less thickly set on the surface of stems and leaves. E.)

SIMPLICIS/SIMUS, very simple, absolutely undivided.

SINGLE (unicus) one flower only upon a stalk, as the *Tulip*.

(**SINISTRO'SUM**, twining from left to right. E.)

SINUA'TO-ANGULO'SUM, indented and angular.

SINUA'TO-DENTA'TUM, indented and toothed.

SINUA'TUS, indented (or rather, sinuated; cut into roundish wide openings, as certain leaves. E.)

SITTING or **SESSILE** (sessilis) **LEAVES** have no leaf-stalk, as *Spears-int* and *Hound's-tongue*. Pl. 9. f. 4. (v.)

—— **FLOWERS**, are those which have no **FRUIT-STALK**, as the flowers of *Mezerron*.

(**SKIN** (testa) of a seed: either simple, or lined with a finer film, *membrana*, in vegetation bursts irregularly. Pulpy seeds are furnished with pulp between the *membrane* and the outer skin. Sm. Gram. E.)

SKINNY, or **SKIN-LIKE** (scariosus) tough, thin, and semi-transparent, like gold-beater's skin; as the cup of *Thrift*.

SLANTING (*obliquus*) straight, but in a direction between horizontal and perpendicular.

SMOOTH (*glaber*) surface smooth to the touch, without any hairiness, or rough inequalities; opposed to *rough*, *prickly* or other inequalities occasioned by prominences on the surface.

SNAPT (*incisus*) cut at the edges without any regularity.

SOLID (*solidus*) **STEM**; without a cavity; opposed to hollow.

—— **ROOT**; fleshy and uniform, as that of a *Turnip*.

SOLITARY (*solitarius*) only one in a place; has but one flower on a fruit-stalk, or only one fruit-stalk proceeding from the same part of a plant.

SOOTY (*fuliginosus*) dark and dirty as if sooted, as are some of the *Lichens*.

(*So'ri*; the masses of fructification on *Ferns*. E.)

SPA'DIX, a sheathed fruit-stalk.

SPAN (*spithama*) a measure of nearly seven inches; see *Measure*.

SPAR'SUS, scattered.

SPA'THA, sheath.

SPATULA'TUS, battledore-shaped.

SPECIES, see the *Introduction*.

SPEAR-SHAPED (*lanceolatus*) as the leaf of *Ribwort Plantain*, and *Spearmint*. Pl. 7. f. 6.

SPEAR-EGG-SHAPED (*lanceolato-ovatum*) applied to a leaf, &c. signifies that it is shaped like a spear towards the base, and like an egg towards its extremity. So in the following, and other compound terms of this kind, the first term applies to the base of the leaf, or the part next the stem or branch, the second term to the part towards the extremity. Thus *ovato-lanceolatum*, egg-spear-shaped, is just the reverse of *spear-egg-shaped*. *Linear-lanceolatum*, strap-spear-shaped, &c.

SPECIFIC CHARACTER; one or more circumstances of a plant, sufficient to distinguish it from every other plant of the same genus. The Specific Characters are generally taken from the leaves or stem; sometimes from the flowers, but seldom from the roots.

SPHERICAL (*sphærica*) globular.

SPI'CA,
SPI'CU'LA, } see *Spike* and *Spiket*, or *Spikelet*.

SPIKE (*spica*) a composition of flowers placed alternately on each side of a common simple fruit-stalk, and not standing upon little fruit-stalks. *Great Mullein*, *Agrimony*, and many *Grasses* have their flowers collected into spikes. Pl. 6. f. 5.

SPIKET (*spicula*) or **LITTLE SPIKE**, **SPIKELET**, constituting a part of a larger composition of florets. Its use is mostly confined to the *Grasses*, and to express the composition of their florets contained within one common Calyx.

SPIKE-STALK (*rachis*) a long, rough, slender, receptacle, upon which the flowers composing a spike are placed. Take a spike, (or, as it is frequently called, an ear) of *Wheat*; pull off all the seeds and chaff, what remains is a **SPIKE-STALK**. Pl. 2. f. 24. (c. c.)

SPI'NA, a thorn.

SPINDLE-SHAPED (*fusiformis*) a gradually tapering **ROOT**; (or *Tap-*

- SPINES'CENS**, becoming hard and thorny.
SPINOSUS, thorny.
SPIRAL, (*spiralis*) twisted like a corkscrew. Pl. 10. f. 6. (*a. a.*)
SPI'RHAMA, a span.
SPOKES (*radii*) the fruit-stalks of flowers collected into **UMBELS**, or **UMBELLULES**; see those terms. They spring from one point, and diverge like the spokes of a wheel. Pl. 6. f. 9. (*c. c. c. c.*)
(SPORAN'GIUM; a term applied to certain *Algae* by Hedwig, and synonymous with *Pericarpium*. E.)
(SPORULES (*sporule*, *spore*, *gongyle*), Seeds which are destitute of cotyledon, radicle, and plumule, vegetating indifferently from any part of their surface, as those of *Cryptogamic* plants. E.)
SPREADING (*diffusus*) not rising high, but spreading wide upon the ground; as the stems of *Fumitory* and *Pansy*. Sometimes also
 • applied to a panicle, wherein the little spikes and fruit-stalks stand wide and distant, (as also to leaves. E.)
SPUR (*calcar*) shaped like the spur of a cock, as the Nectaries of *Larkspur*, (and some of the *Orchidæ*, often containing abundance of honey. E.)
SQUAMA'TUS, } scaly.
SQUAMO'SUS, }
SQUARRO'SUS, scurfy.
STALK (*scapus*) that species of stem which elevates and supports the flowers, but not the leaves of a plant. It differs from the **FRUIT-STALK**: for that springs from the stem, or branches; but this rises immediately from the root; as in *Narcissus*, *Lily of the Valley*, and *Hyacinth*. Pl. 6. f. 4.
STAMEN, or **CHIVE**; open the blossom of a *Tulip* or a *Lily* and you will see six long threads or filaments, placed round the central pillar, with an Anther on the top of each. One of these filaments, together with its Anther, is called a **Stamen** (and is essential to all plants, though assuming different appearances. E.) Pl. 3. f. 2. (*b. b. b. b. b. b.*) f. 3. (*h. i.*) f. 6.
STAMENIFEROUS FLOWERS, or **FLORETS**, such as contain one or more Stamens, but no Pistil. These are necessarily barren.
STANDARD (*vexillum*) the upright petal of a butterfly-shaped blossom, very remarkable in the *Pea*. See the Introduction to the Class *Diadelphia*. See also pl. 1. f. 12. (*b.*) f. 14. (*b.*) f. 15.
STARRY (*stellatus*) plants whose leaves grow in whirls round the stem; as *Goose-grass*, *Cheese-cresset*, and several others of the fourth Class. Pl. 9. f. 3. (*b. b.*)
 — (*pilis stellato-tripartitis*;) hairs triply-starred; as are those on the leaves of *Hedge-mustard*: or otherwise. E.)
(STATION (*habitat*) the natural place of growth. E.)
STELLA'TE, starry, or star-like.
STEM or **STALK** (*caulis*) the proper trunk of a plant supporting the leaves, branches, and flowers. It rises immediately from the root. (Its principal positions or directions may be classed as either erect, oblique, supported, climbing, decumbent, or procumbent; and these may be either undivided, (simple), or divided, and that in various manners. E.)

STEM or **STIPE** (stipes) formerly called the pillar, which supports the pileus of some of the *Fungi*. Pl. 1. f. H. (b.) (also the fronds of *Ferns*. E.)

STEM-CLASPING (amplexicaulis) see Embracing the stem.

STEM-LEAVES (caulina) such as grow immediately upon the stem, without the intervention of branches.

STEM-LESS (acaulis) without a stem (in which description of plants the leaves necessarily spring from the roots, and are therefore called radical. E.)

STEN'ILIS, barren.

STIFF, see Rigid.

STIG'MA, a summit.

STIM'ULI, stings.

STINGS (stimuli) sharp-pointed substances conveying poison into the part they penetrate. Few people are ignorant of the sting of a *Nettle*.

(**STIPES**, a pillar, pedicle, as the stem of some kind of *Fungi*, and *Ferns*. E.)

STIPITA'TUS, standing on a pillar, pedicle, or stipe.

(**STIP'ULÆ**, stipules, a leafy appendage to the proper leaves, or their foot-stalks, usually in pairs, at the base of the latter; for the purpose of supporting them at their first appearance. They are sufficiently evident in the *Garden Pea*. Pl. 10. f. 6. (b. b.) Some are deciduous, others remaining as long as the leaves; simple or compound. E.)

STO'LO, a sucker.

STOLONIF'ERUS, putting forth suckers.

STONE; see Nut.

STRADDLING (divaricatus) branches standing wide from each other.

STRAIGHT (rectus) not bending.

STRAP-SHAPED (lincaris) long and narrow like a strap or fillet; as the leaves of *Thrift*, *Crocus*, and *Rosemary*. Pl. 7. f. 7. When the same shape is expressed as existing in a floret of a compound flower, Linnæus uses the term *ligulatus*. Pl. 4. f. 21.

STRAP-SPEAR-SHAPED (lincari-lanceolatum) see Spear-egg-shaped.

STRAW (culmus) a kind of stem proper to *Grasses*. Pl. 10. f. 3. (which may be either simple or without joints, as in the *Common Rush*; jointed, as in *Oats* and most *Grasses*; or bent angularly, knee-jointed. E.)

STREAKED, marked with depressed, but not always parallel lines.

STRIA'TUS, scored, (or striated. E.)

STRICT'US, stiff and straight.

STRIG'Æ, strong spear-shaped bristles, or thorns.

STRIGO'SUM, furnished with strigæ.

STRINGS (nervi) see Fibres; as in the *Broad and Narrow-leaved Plantain*. Pl. 7. f. 46.

STROB'ILUS, a cone.

STROBILIF'ORMIS, (spica) a spike like a cone.

STYLE, or **SHAFT**, is a part of a Pistil standing upon the germen, and supporting the summit, or stigma. (It is composed of minute tubes, through which the subtle vapour of the Pollen passes to fertilize

the embryo seeds in the Germen. E.) See Pistil. Pl. 3. f. 2. (c.) f. 5. (d.) f. 7. (k.)

SUB, is prefixed to many of the Linnæan terms, and signifies that the term is not precisely and exactly applicable in its strictly defined sense, to the subject spoken of, but that it must be understood with some latitude (or rather that the object approaches, but does not entirely bear out the meaning of the more definite term in its full and complete sense. E.) Thus *sub-sessilis* signifies nearly sessile; *sub-rotundus*, roundish, or nearly round; *sub-ovalus*, not exactly egg-shaped, but nearly so.

SUBDIVISUS, subdivided.

(**SUBMER'SUS**, submersed, growing under the surface of the water, as *Sea-weeds*, &c. E.)

SUBRAMOSUS, a little branched.

SUBROTUNDUS, nearly globular.

SUBULATUS, awl-shaped.

SUCCULENTUM, succulent, juicy.

(**SUCCUS PROPRIUS**; see Juice. E.)

SUCKERS (stolones) shoots which rise from the root, spread along the ground, and then take root themselves, as in the *Sweet Violet*.

SUFFRUTICOSUS, somewhat woody, nearly shrubby. *Sage* and *Lavender* are examples.

SULCATUS, furrowed.

SUMMIT (stigma) the upper part of a Pistil. (It is glutinous, to retain the Pollen, which bursts there, and serves to perfect the Seed in the Germen. E.) See Pistil. See also pl. 3. f. 2. (f.) f. 5. (c.) f. 7. (l.)

SUPERFICIES, the surface.

SUPERFLUA, superfluous; see Polygamia Superflua, in the Introduction to the Class Syngenesia.

SUPERIOR (superus) CUP or BLOSSOM; when the cup or blossom is situated above the Germen, it is said to be superior; as in *Honey-suckle*, *Currant*, and *Campanula*.

SUPERUS, superior; above.

SUPINUS, the upper surface.

(**SUPPORTED**, (fulcratus) as are certain stems, surrounded by others which appear to prop them. E.)

SUPRA-DECOMPOSITUS, more than doubly compound.

SUPRA-FOLIACEUS, placed above the leaf.

SURCULUS, a shoot; the branch of a Moss.

SUTURA, seam.

SWORD-SHAPED (ensiforme) as the leaves of *Iris*, or *Flower de Luce*.

SYNGENE'SIA, united Anthers; the name of a Class: which see.

TAIL (cauda) a sort of slender pointed appendage to some seeds (formed of the permanent style; it is generally feathery: as in *Traveller's Joy*. E.)

(**TAP-ROOT**, (radix fusiformis.) E.)

TAPER (acuminatum) LEAF, gradually tapering to a point. Pl. 7. f. 41.

—— (attenuatus) a fruit-stalk, growing slender.

TARGET (*pelta*) a kind of fructification on the leaves of some *Lichens*, which is circular and a little convex. See *Saucer*.

TARGET-SHAPED, PELTATE, (*peltatum*) applied to a leaf having its leaf-stalk fixed, not at the edge, but nearly in its centre; as ~~the~~ *Water Lily*. P. 9. f. 4. (*a.*)

SUMMIT, one that is circular and flat.

TENDRIL (*cirrus*) a spiral shoot or string, by means of which some plants support themselves against adjacent bodies. It is well known in the *Vine* and *Pea*. Pl. 10. f. 6. Pl. 8. f. 58. (Tendrils are either axillary, or terminating; simple, or branched. E.)

TEN'UIS, thin, slender.

TERES, columnar, cylindrical, or round like a walking-stick, (as applied to a stem, the *truncus teres*, tapering upwards like the shaft of a column; to a leaf, *folium teres*, in contradistinction to the flat round leaf, affecting the same shape as the stem. E.)

TERETIUS'CLUS, roundish.

TERGEM'INUM (leaf) doubly twinfork.

TERMINA'LIS, terminating, or terminal.

TERMINATING (*terminalis*) (opposed to lateral) standing at the end of the stem or branches; as the fruit-stalks of *Borage*, the blossoms of *Groundsel*.

TERNA'TIS (leaves) growing three together from the same point. Pl. 7. f. 47. and 51.

TER'NIS, by threes; three in a place. "

TESSERA'TUM, chequered.

(*TES'tA*, the skin of a seed. E.)

TETRADYNA'MIA, four Stamens longer; the title of one of the Classes; which see.

TETRAG'ONUS, four-cornered.

TETRAGY'NIA, four Pistils, a circumstance which gives title to an Order in several of the Classes.

TETRAN'DRIA, four Stamens; the title of the fourth Class; which see.

TETRA-PET'ALA, four petaled.

TETRA-PIVI'LUS, four-leaved.

TETRA-SPER'MA, four-seeded.

THAL'AMUS, the same as *Receptacle*; which see.

(*THAL'US*; see *Frons*. E.)

(*THICA'te*; as alluding to the capsules of *Ferns*; see *Exannulata*. E.)

THORN, (*spina*) a short-pointed projection growing from the woody substance of a plant; as in *Gorse* and *Black-thorn*. Pl. 10. f. 1. (By culture in rich soil thorns sometimes become branches; whereas foot-stalks, stipule, and flower-stalks occasionally harden into spines. These transitions must be deemed merely phenomena, produced by artificially altering vegetables from a state of nature; and, (as Dr. Drummond ably argues, in opposing Willdenow's theory of thorns being occasioned by defective nutriment); "thorns are no more abortive buds, than single flowers are abortive attempts to produce double ones." They may be either simple or compound; the latter forked, three-pronged, or branched, when divided into many lateral points; and are generally considered as means of defence. E.)

- THREAD**, see Filament.
- THREAD-SHAPED**, (filiformis) of the same thickness from top to bottom, like a piece of packthread. Take for example the leaves of *Fennel*, or the style of the *Crocus*, or *Honeysuckle*.
- THREE-EDGED** (trigonus) or three-cornered; a stem having three corners or angles, and the sides not flat.
- THREE-FIBRED**, (trinervatus) having three veins or nerves running from the base to the end of a leaf without branching off.
- THREE-LOBED** (trilobatum.) Pl. 7. f. 17.
- THIRONGING** (confluentia) assembled in close parcels, with intervening naked places.
- THYRSUS**, cluster.
- TILED** (imbricatus) one leaf or scale partly covering another, like the tiles on a house: e. g. the cup of *Dandelion*, or of *Burdock*. Pl. 4. f. 25. (a.) and pl. 9. f. 2.
- TIP**, see Anther.
- TOMENTOSUS**, cottony.
- TOMENTUM**, cotton.
- TONGUE-SHAPED** (lingulatum) applied to express a thick fleshy leaf, somewhat in the shape of a tongue.
- TOOTHED** (dentatus) when the edges of a leaf are set with little teeth, at some distance from each other, not pointing towards the end, as in the serrated leaves, nor towards the base, as in the inversely serrated leaves. *Common Eye-bright*, *Primrose*, *Cowslip*, and *Mountain Willow-herb*, have toothed leaves. Pl. 7. f. 30.
- TOOTH-SERRATED** (dentato-serratum) when the edge of a leaf is set with teeth, and these teeth are serrated.
- TURB- SHAPED** (turbinatus) nearly conical; some *Pears* are of this form.
- TUBOSUS**, protuberated, (swollen into protuberances, as certain seed-vessels. E.)
- TUBULOSUS**, a little swelling out.
- TORTILIS**, twisted.
- TRAILING** (procumbens) STEMS; lying along upon the ground, and not sending out roots: e. g. *Common Speedwell*, *Red Pimpernell*, *Small Sea Bindweed*.
- TRANSVERSUM** placed across, or crosswise, as when the partition of a seed-vessel is not placed in the same direction or plane with the valves, but perpendicular to them.
- TRAPEZIFORME**, the shape of a flat leaf having four unequal sides.
- TREBLY-COMPOUND**. See Triply-compound.
- TRIANDRIA**, three Stamens, the name of the third Class.
- TRIANGULAR** (triangularis) expressing the form of a leaf, stem or stalk, with three sides, and three angles, or corners. Pl. 7. f. 12.
- TRIANGULAR-SPEAR-SHAPED** (deltoides) leaves in this form are broad at the base, and nearly triangular, but spear-shaped at the point: e. g. *Black Poplar*. Pl. 7. f. 45. The term *deltoides*, applied to thick fleshy leaves, bears a different meaning, but no such leaf occurs amongst British plants.
- TRICÆ**: a term of Acharius to designate the coiled horse-hair like receptacles in his genus *Gyrophora*. E.)

TRICHO'TOMUS, dividing by threes.

TRICOC'CA, three-celled and three-seeded, swelling out.

TRICUSPIDA'TUS, three-pointed.

TRIFIDUS, three-cleft.

TRI'GONUS, three-cornered, triangular, or three-edged.

TRI'GY'NIA, three Pistils; giving name to an Order in several of the Classes.

TRILOB'A'TUM, three-lobed.

TRIOCU'LA'RE, three-celled.

TRINER'VE, three-fibred.

TRIPARTI'TUS, with three divisions.

TRIPLE-THORN (triplex.) Pl. 10. f. 1. (*b. b. b.*)

TRIPHYL'LUS, three-leaved.

TRIPINNA'TUM, triply-winged.

TRIPLY-COMPOUND LEAVES (*folia supra-decomposita*) are of three kinds, viz.

1. DOUBLE-TWINFORK, (*tergeminus*) leaf-stalk, with two leaflets at the end of each, and two more at the division of the fork. Pl. 8. f. 57.
2. TRIPLY-THREE-FOLD (*triternatus, triplicato-ternatus,*) Pl. 8. f. 59. the divisions of a triple leaf-stalk again subdivided into *threes*, and three leaflets at the end of each subdivision.
3. TRIPLY-WINGED (*tripinnatus; triplicato pinnatus*) when the lateral ribs of a doubly-winged leaf have themselves other leaf-stalks with winged leaves. Pl. 8. f. 60. 61.

TRIQUET'ER, with three flat sides, as the stem of *Pansy*.

TRISPER'MA, three-seeded.

TRITERNA'TUM, triply-threefold.

TRIVALVE, three-valved.

TRIVIAL NAME, a name added to the Generic name, for the more ready discrimination of species of the same Genus.

TROWEL-SHAPED, or TRIANGULARLY-SPEAR-SHAPED, (*Deltoides*) which see.

TRUNCA'TUM, lopped.

TRUN'CUS, a trunk.

TRUNK (*truncus*) the main body of a plant; it is either a Stem, a Stalk, or a Straw. See those terms. (By some authors it is used exclusively to designate the stems of trees and shrubs; characterizing it as always ligneous and perennial. E.)

TUBE (*tubus*) the lower part of a blossom off one petal is frequently lengthened out into a tube, as in *Crocus*, and *Polyanthus*. Pl. 4. f. 1. (*a.*) f. 7. (*a.*)

TUBERCLE (*tuberculus*) a little solid pimple.

TUBERCU'LI, tubercled. A name given to the plants of one division of *Lichens*, on account of their bearing solid warts or tubercles.

TUBULA'TUS, } tubular.

TUBULO'SUS, }

TU'BUS, tube.

(TUBERO'SA, (*Radix*) a Knobbed Root, as the *Potatoe*, &c. "Tubers are annual productions of the herbaceous part of the plant, rather

appendages of the stem than of the root; they are reservoirs of nutriment to support certain buds or gems during their evolution and the earlier stage of their growth as plants; they may be either closely attached, or filipendulous." Thoms. E.)

TUBEROUS (tuberosus) **ROOT**; consisting of many roundish knobs collected into a bundle, as the root of *Peony* and *Dropwort*. Pl. 11. f. 7.

TUBULAR (tubulosus) in the shape of a hollow tube, as the cup of *Privet*, the blossom of *Honeysuckle*, or the nectary of *Hellebore*.

———— **FLORETS**, in compound flowers of the Syngenesia Class are shaped like a hollow tube, and the top of each floret is cloven into five segments. In *Tansy* all the florets are tubular, but, in *Sunflower*, and *Daisy*, only those in the centre. Pl. 4. f. 26.

TUFT or **CYME**, (cyma) a composition of flowers, in which a number of fruit-stalks proceeding from one common centre, rise to the same height; and these again shoot out other little fruit-stalks, which do not proceed from one central point. *Elder*, *Guelder Rose*, and *Laurustinus*, are instances. Pl. 6. f. 10.

(TUNIC, (arillus) an external covering, or coat, such as occasionally envelopes the seed, &c. E.)

TUNICATUS, coated.

(TURBINA'TUS, top-shaped: nearly conical. Sometimes translated turbinate, or turban-shaped. E.)

TURGIDUS, swollen, turgid.

TURIO, a young unexpanded shoot, as is the *Asparagus* in the state it is gathered for eating.

TWINING (volubilis) twisting round other bodies, and ascending in a spiral line. Some plants twine from the left to the right, thus (in the direction of the sun's apparent motion, when the spectator faces the South, as *Hop*, *Honeysuckle*, and *Black Briony* (this is called *sinistrorsum*. E.) Others twine from the right to the left, thus, contrary to the sun's apparent motion, as *Bindweed* and *Scarlet Kidney Bean* (*dextrorsum*: each species invariably preserving its particular direction. E.) Pl. 10. f. 5.

TWIN-FORK, (bigeminis) see Doubly Compound Leaves.

TWO-EDGED, (anceps) as the stem of *Tutsan*, and *Sweet-smelling Solomon's Seal*.

TWO-ROWED, or **TWO-RANKED** (distichus) like the teeth in a double box or ivory comb. The leaves of the *Common Fir*, and the flowers of *Sweet Cyperus*, are examples (or as applied to a stem whose branches extend precisely in two opposite directions. E.)

UMBEL (umbellæ) a composition of flowers in which a number of slender fruit-stalks proceed from the same centre, and rise nearly to the same height, so as to form a regular surface at the top. *Hemlock*, *Carrot*, and *Com-pairsnep*, are examples. These are said to be *Umbelliferous* plants. Pl. 6. f. 9.

UMBELLULE (umbellula) a little Umbel. The fruit-stalks or spokes which compose an umbel are often divided at the top into several smaller fruit-stalks, and these smaller sets of flowers are called *Umbellules*: *Hemlock*, *Carrot*, and *Angelica*, furnish instances.

- The fruit-stalks of an Umbel are called *Spokes*. Pl. 6. f. 9.
 (b. b. b. b.) Those of an Umbellule, *Spokets*, or little *Spokes*.
- UMBILICA'TUS, resembling a navel; dimpled.
- UN-ANGULA'TUS, one-edged.
- UNARMED (inermis) without weapons of defence. See Weapons.
- UNCINA'TUS, hooked at the end.
- UNDA'TUS, waved.
- UNDER-SHRUB (suffrutex) like a shrub in its woody texture at the bottom, but the top shoots herbaceous, tender, and dying in the winter. *Lavender* is an example.
- UNDIVIDED, see Simple.
- UNEQUAL FLORETS (radiati) when an Umbel is not composed of equal florets, but those in the circumference are larger than those in the centre, and the outer petals are larger and different in shape from the inner petals. As in *Carrot* and *Com-parsnep*. See Radiate, for Linnaeus uses the same term (radiatus) to express the dissimilarities of the florets in the umbelliferous plants of the Class Pentandria, as those of the compound flowers of the Class Syngenesia.
- UN'GUIS, a nail, see Measure. Also the claw of a Petal; see Claw.
- UNGULA'TUS, hoof-shaped.
- U'NICUS, single; only one.
- UNIFLO'BUS, one-flowered.
- UNIFORM (equalis) a term applied to compound flowers when the florets which compose them are all alike; as those of *Fennel*, *Lettuce*, and *Burdock*.
- (UNILATERA'LIS, unilateral: growing from one side only, leaning all to one side, as the position of certain leaves. E.)
- UNILOCULA'RE, one-celled.
- UNIVALVE, one-valved.
- UNIVERSA'LIS, general.
- UNITED (compatus) LEAVES, two opposite leaves growing together at the base. Pl. 9. f. 4. (h. h.)
- UPRIGHT (erectus) standing upright, or nearly so, as the cups of *Periwinkle*; the anthers of *Polyanthus*; the stalks of *Tulips*; the stems of *Sparagus*. It is also applied to leaves. Pl. 9. f. 5. (b. b.)
- URCEOLA'TUS, pitcher-shaped.
- U'RENS, stinging.
- UTRICULUS, a little bag or hollow vesicle (as a single-seeded capsule without valves. E.)
- VAGI'NA, a sheath formed by a part of a leaf, distinct from the Sheath (Spatha) which is a species of Calyx. It is very frequent in *Grasses*.
- VAGI'NANS, sheathing.
- VAGINA'TUS, sheathed.
- VALVE (valvula) the different pieces that compose a capsule are called valves. Thus in *Thorn-apple* are four valves. Pl. 5. f. 14. (c. c. c. c.) In *Loosestrife*, ten; in *Jacob's Ladder*, *Daffodil*, and *Hyacinth*, three. Pl. 5. f. 6. f. 12. (a. a.)
- The Petals and Calyxes which constitute the flowers of *Grasses*,

- are called valves; thus in *Common Meadow Grass*, the cup is a dry chaffy husk, composed of two valves, and the blossom is formed of two other valves. See pl. 2. f. 1. (a. a.) (b. b.) and most of the other figures in that plate.
- VALVE.** The mouth of the tube of a blossom is frequently closed by several projecting substances; thus in the blossoms of *Borage* and *Jacob's Ladder*, the tube is closed by five of these substances which are also called valves.
- VANE-LIKE** (versatilis) turning about like a vane, or weathercock, as is the case with the Anthers of *Geranium* and *Crown Imperial*.
- (VARIEGA'TUM, variegated:** applied to leaves blotched, or striped with yellow or white; as those of *Ribband Grass*, *Round-leaved Mint*, &c. E.)
- VARIETY** (varietas) is applied to such individual plants as differ in some circumstances from others of the same species, but not differing so essentially or so permanently as to induce us to reckon them as distinct species.
- (VASCU'LUM;** a lacquered or painted tin box, the size of an octavo volume, or larger, calculated to preserve plants in a state of freshness many days, by confining their exhausting evaporation. A gentle sprinkling with water will also promote their revival in the box. E.)
- VAULTED** (fornicatus) like the roof of the mouth. The upper lip of many of the gaping blossoms is vaulted; c. g. *Red* and *White Dead-nettle*.
- VEIL** (calyptra) the Calyx of *Mosses*, covering the Capsules. It is generally in a conical form, like an extinguisher. (Some recent Botanists have supposed this membranous hood to partake more of the nature of a *Corolla*; or at least of a petal. E.) Pl. 1. f. D. (a.)
- VEINED** (venosum) a leaf is said to be veined when its fibres are branched, as in Pl. 7. f. 44. (which veins, with the ribs, contain the principal sap vessels. E.)
- VENO'SUM** (leaf) veined.
- (VENTRICO'SUS, ventribose, distended in the middle. M.)**
- (VERNA'TIO, the folding of the scales which envelope the embryo plant in a gemma or bud. E.)**
- VERRUCO'SUS, warty.**
- VERSAT'ILIS, vane-like, (versatile. E.)**
- VERTICILLA'TI, growing in whirls or whorls (spreading from one centre in all directions. E.)**
- VERTICIL'LI, whirls, or whorls.**
- VESIC'ULÆ, bladders.**
- VEXIL'LUM, a standard.**
- VILLI, soft hairs.**
- VILLO'SUS, soft-haired.**
- VIMEN, a slender and flexible twig.**
- VIRGA'TUS, rod-shaped.**
- VISCID, or clammy, (viscidus.)**
- VISCO'SITAS, clamminess.**

(**VITÆ**; fillets or bands with which the fruit of certain plants is ribbed; as in *Spignel*. E.)

VIVIPAROUS (*viviparus*) a term applied to stems or stalks producing bulbs that are capable of vegetation. In *Toothwort* and *Star of Bethlem*, these bulbs are found at the base of the leaves; in *Small Bistort*, on the lower part of the spike; in some species of *Garlic*, at the origin of the Umbel of flowers; and upon the spikes of some of the Grasses, as *Cat's-tail Canary*. It is also used where the seeds falling upon some part of the parent plant germinate and produce a young plant.

VOLUBILIS, twining (or turning spirally, as certain stems, &c. E.)

VOLVA, a curtain. It is used also by some authors, but not by Linnæus, to signify the wrapper.

(**WART**, see *Haustoria*. E.)

WARTY (*verrucosus*) having little hard lumps or warts upon the surface.

(**WATERY WHITE**: the appearance given to white linen or paper by wetting it; diminishing the intensity of the whiteness, but increasing the transparency: also applicable to other colours; and usually descriptive of certain *Fungi*, &c. E.)

WAVED (*undatus*) when the surface of a leaf towards the edge does not lie flat, but appears waved, and full, like a man's ruffle. The leaf of *Water Callitrops* is an example. Pl. 8. f. 66.

WEAPONS (*arma*) are either Prickles, Thorns, or Stings. Pl. 10. See those terms.

WEDGE-SHAPED (*cuneiformis*) as the leaves of *Garden Spurge*, and *Garden Purslain*. Pl. 8. f. 65.

WHEEL-SHAPED (*rotatus*) a term used to express a blossom of one petal, with a flat border and a very short tube. *Borage* and *Speedwell* are familiar examples. Pl. 4. f. 6.

WHIRLS or **WHORLS**, (*verticilli*) of **BRANCHES**, **LEAVES**, or **FLOWERS**. The branches of the *Fir*, the leaves of *Ladies' Bed-straw*, and the flowers of *Dead-nettle*, grow in whirls round their respective stems. They somewhat resemble the spokes round the nave of a wheel. Pl. 6. f. 11.

(**WHITE**, (*albumen*.) E.)

WINGS (*alæ*) the lateral petals of a butterfly-shaped blossom; e. g. in the *Pea*. See the Introduction to the Class *Diadelphia*. See also pl. 4. f. 13. (*c. c.*) and f. 16.

(—) The dilated appendage terminating or surrounding Seeds, and sometimes serving to aid their dispersion through the air, or Seed-vessels; the capsule of the *Ash* is furnished with one wing, the *Maple* with several, as more frequently prevails, E.)

WINGED (*alatus*) **LEAF-STALK**, flattish, with a thin membrane or leafy border on each side.

WINGED (*pinnatus*) **LEAF**; when an undivided leaf-stalk has many little leaves growing from each side, as in *Jacob's Ladder*, *Bladder Senna*, *Ash*, and *Pea*. Pl. 8. f. 52. 53. 54. &c.—The reader is desired particularly to study this plate with its annexed explanation, in order to obtain accurate ideas of the different kinds of winged leaves.

WINGED (alatus) **STEM**, or **LEAF-STALK**, such as have a thin flat membrane on each side, as the leaf-stalk of the *Orange-tree*.

WING-CLEFT (pinnatifidus) is applied to a leaf that is cut and divided so deeply on each side, down towards the middle rib, as almost to resemble a winged leaf. *Corn Poppy* and *Polypody* are examples; and so are the root-leaves of *Shepherd's Purse*. Pl. 7. f. 23.

WINGED-SHOOTS (surculi pinnati) when the shoots strike out from the sides, like the plumage of a quill. Instances will be found in several species of *Feather-moss*, (*Hypnum*.)

WIRES (flagelli) see Runners.

(**WOOD**) the material which constitutes the principal solid bulk of trees; consisting of numerous concentric layers, formed of cellular substance, strengthened by innumerable fibres and vessels. The age of a tree may be ascertained by these rings, one being added annually. The opinion of Malpighi and Grew that wood is formed by the bark has been controverted. Mr. Thomson deduces from Mr. Knight's experiments, that although the alburnum is generated through the medium of the bark, yet it is decidedly not transmuted liber. Mr. Knight asserts that the bark deposits the alburnous matter; but that the leaves are the organs in which this matter is elaborated from the sap. Dr. Hales demonstrated that the leaf was essential to the formation of wood; and hence trees and shrubs whose leaves have been destroyed by caterpillars, as Mr. Thomson remarks, form scarcely any new wood in that season. E.)

WOODY (arboreus) opposed to herbaceous. The main stems of *Wall-flower* or *Gilliflower* are woody.

WOOL (lana) a kind of curly-haired clothing upon the surface of some plants. The leaves of *Horehound*, *Great Mullein*, and *Gorse* are woolly.

WOOLLY (lanatus.)

WRAPPER (volva) but not the volva of Linnaeus; a tough membrane which envelopes the whole plant of some of the *Fungi* in its younger state. See the Introduction to the Class Cryptogamia; see also pl. 19. fig. F. (m. m. m. m. m.)

WRINKLED (rugosus) as are the leaves of *Sage*, *Primrose*, *Wood Strawberry* and *Hazel*.

(**ZIGZAG** (flexuosus) having many contrary bendings, alternately from right to left, and from left to right; as the stems of *Matted Sea Lavender*; *Rough Bindweed* and *Woody Night-shade*, or the branches of *Golden Rod*. E.)

EXPLANATION OF THE PLATES.

PLATE III.

Parts composing a Flower.

- FIG. 1. A Back View of a ROSE, to shew the Calyx or Cup.
a. a. a. a. a. the Segments of the cup.
- FIG. 2. A figure of the CROWN IMPERIAL, to shew
a. a. a. a. a. a. the Petals.
b. b. b. b. b. b. the Stamens.
c. c. c. c. c. c. the Anthers.
d. c. f. the Pistil.
d. the Germen.
e. the Style.
f. the Summit.
- FIG. 3. *g.* a Petal of the CROWN IMPERIAL separated from the Flower.
h. i. a Stamen ; *h.* the Filament ; *i.* the Anther.
k. a nectariferous pore.
- FIG. 4. The Seed-vessel of the CROWN IMPERIAL cut a-cross, to show the three Cells. During the existence of the Blossom this was called the Germen.
- FIG. 5. A Flower, with the Cup, the Stamen, and the Pistils ; but the *Petals* taken away.
a. the Calyx, in this case called a Cup.
b. b. b. b. b. b. the Anthers of the Stamens.
c. the Germen.
d. the Style.
e. the Summit.
f. one of the Anthers discharging its pollen.
- FIG. 6. *g. h.* a Stamen taken out of a Flower.
g. the Filament ; *h.* the Anther, which, in this instance, is double.
- FIG. 7. *i. k. l.* a Pistil taken out of a Flower ; *i.* the Germen ; *k.* the Style ; *l.* the Summit.
- FIG. 8. *a.* a particle of Pollen greatly magnified ; *b.* the vapour escaping from it, which is supposed to pass through the Style, to fertilize the Germen.
- FIG. 9. A DAFFODIL and its sheathing Calyx ; *a. a.* the Sheath ; *d.* the sheathed fruit-stalk.
- FIG. 10. A Cup which is the Calyx of a POLYANTHUS, with five sharp teeth in the rim.

PLATE IV.
BLOSSOMS.

- FIG. 1. A Blossom of one Petal; salver-shaped.
a. the Tube; *b.* the Border.
- FIG. 2. A bell-shaped Blossom.
- FIG. 3. A tubular bell-shaped Blossom.
- FIG. 4. A Blossom bell-shaped, but distended or ventricose.
- FIG. 5. A Blossom with six reflected Segments.
- FIG. 6. A back view of a wheel-shaped Blossom, to shew the shortness of the tube.
- FIG. 7. A funnel-shaped Blossom; *a.* the Tube; *b.* the Border; *c.* the cup.
- FIG. 8. 9. Gaping Blossoms.
a. the Upper Lip.
b. the Lower Lip.
c. the Tube.
d. the Mouth.
- FIG. 10. A gaping Blossom; *a.* the Upper Lip; *b.* the Lower Lip; *c.* the Palate.
- FIG. 11. A cross-shaped Blossom; with the Cup taken away, to show
a. the Claws of the Petals; *b.* the Limbs of the Petals; *c.* the Receptacle.
- FIG. 12. A cross-shaped Blossom, with the Calyx or Cup; *a.* the Petals; *b.* the Cup, gibbous at the base.
- FIG. 13. 14. Two views of butterfly-shaped blossoms; *a.* the Cups; *b.* the Standards; *c.* the Wings; *d.* the Keel.
- FIG. 15. The Standard of a butterfly-shaped Blossom separated from the other Petals; *c.* the Claw.
- FIG. 16. One of the Wings of a butterfly-shaped blossom separated from the other Petals; *m.* the Claw.
- FIG. 17. The Keel, or lowermost Petal of a butterfly-shaped Blossom separated from the other Petals.
- FIG. 18. The Cup, Stamens, and Pistil, of a butterfly-shaped Blossom, after the Petals are taken away; *a.* the Cup; *b.* the Stamens; *i.* the Pistil.

COMPOUND FLOWERS.

- FIG. 19. A Flower of DANDELION, as an example of a compound Flower, in which all the Florets are strap-shaped.
- FIG. 20. The common Calyx or Cup, of a compound Flower, composed of upright Scales, *d.* and reflexed Scales, *c.*
- FIG. 21. A strap-shaped Floret taken out of a compound Flower; *c.* the Blossom; *f.* the Germen; *g.* the Anthers forming a hollow cylinder, through which passes the Pistil; with the two reflexed Summits, *h.*
- FIG. 22. *h.* the Seed of a compound Flower; *i.* the Pillar supporting the feathered Down, *l.*
- FIG. 23. A naked dotted Receptacle of a compound Flower; *a.* the Receptacle; *b.* the Calyx reflexed.

- FIG. 24. The Flower of a DAISY, as an example, of a *Radiate* compound Flower; *a. a. a. a.* the strap-shaped Florets in the Circumference; *b.* the tubular Florets in the Centre.
- FIG. 25. The flower of BURDOCK, as an example of a compound Flower, in which all the florets are *Tubular*; *a.* the scaly tiled Calyx; *b.* one of the Scales with its hooked point; *c. c.* the tubular Florets.
- FIG. 26. One of the tubular Florets separated from the rest; *d.* the Blossom; *e.* the Germen; *f.* the Pistil.
- FIG. 27. One of the Seeds; *d.* the pyramidical seed, crowned by the short down, *h.*

PLATE V.

NECTARIES.

- FIG. 1. The Blossom of a DAFFODIL, with the bell-shaped Nectary.
- FIG. 2. The blossom of the PARNASSIA to show the Nectaries; *a. a. a.* which are little Globes supported upon Pillars.
- FIG. 3. *a. a.* The horned Nectarics of the WOLFEBANE; *b. b.* the footstalks which support them.
- FIG. 4. *a.* The horn-shaped Nectary of the LARKSPUR; *b. c. d. e. f.* the Petals.

SEED-VESSELS.

- FIG. 5. *c. c.* The globular Capsule of a POPPY; *a. a.* the hole through which the Seeds escape; *b.* the radiated summit.
- FIG. 6. A Capsule with three valves, opening at the top; *a. a. a.* the Valves.
- FIG. 7. A Capsule cut open lengthwise, to show the Receptacle, with the Seeds fixed to it.
- FIG. 8. A Capsule opening by holes at the sides; *a. a.* holes through which the seeds escape.
- FIG. 9. A Capsule which opens as if it was cut round; *a.* the Capsule entire; *b.* the Capsule, open; *c.* the Receptacle, as it appears after the Seeds are removed.
- FIG. 10. An inversely heart-shaped Pouch, or short Pod, notched at the end.
- FIG. 11. A circular Pouch, or short Pod, notched at the end.
- FIG. 12. A Pouch, or short Pod, opened a little to show *a. a.* the Valves; *b. b.* the partition between the Valves.
- FIG. 13. A Capsule with two boat-shaped Valves, and one Cell; *a. a.* the Valves opening lengthwise.
- FIG. 14. A Capsule cut open horizontally to show *c. c. c. c.* the Valves; *b. b. b. b.* the Partition; *d.* the column in the centre, to which the Partitions are connected; *a. a. a. a.* the Receptacles and Seeds.
- FIG. 15. Seeds of GERANIUM, with a long Bill or Beak; *b.* the Seeds; *a.* the Beak.

- FIG. 16. A Legumen, or Seed-vessel, of two Valves, in which the Seeds are fixed to the upper Seam only; *a. b.* the Valves.
- FIG. 17. A Pod, or Long-pod, a Seed-vessel of two Valves, in which the Seeds are fixed to the two Seams alternately; *a. b.* the Valves; *d. d. d. d. c. c.* the Seeds.
- FIG. 18. A Cone, cut through lengthwise, to show the Scales, and the Seeds.
- FIG. 19. A Berry cut across to show *a. a.* the Seeds; *b. b.* the Pulp; *c. c.* the Coat.
- FIG. 20. A fleshy Capsule, or Pomum, cut across to show *b. b. b. b.* the five Cells.
- FIG. 21. A Drupa, or pulpy Seed-vessel cut across; *a. a.* the pulpy part; *b. b.* the Nut or Stone.

PLATE VI.

SEEDS.

- FIG. 1. The Seed-vessel of the Spindle-tree, to show the Seed-coat; *a. a.* the Valves of the Capsule; *b.* a Seed; *c. c.* the Seed-coat open to show the Seed.
- FIG. 2. A Seed with its Down.
a. hair-like Down; *b.* feathered Down.
d. the Pillar or Pedicle supporting the Down; *c.* the Seeds.
- FIG. 3. The Seed of a Bean split in two, after being soaked a little while in water, to show
a. a. the Seed-lobes.
b. the Heart, or Corcle.
c. the descending part of the Heart.
d. the ascending part of the Heart.
e. the Eye.

FRUIT-STALKS.

- FIG. 4. A Stalk. It supports the Flowers, and springs directly from the Root.
- FIG. 5. A Spike; *a. b. c. d.* the Spikets, Spiculæ, or little Spikes.
- FIG. 6. A Panicle.
- FIG. 7. A Corymbus; *a. a. a. a. a.* the little Fruit-stalks.
- FIG. 8. A Bunch.
- FIG. 9. An Umbel; *b. b. b. b.* Umbellules; *c. c.* the General Involucreum; *d. d. d. d.* the Involucellum; *e. e. e. e.* the Spokes of the Umbel.
- FIG. 10. A Tuft.
- FIG. 11. Whirls of Flowers; *a. a. a.* the Whirl, or Whorl.
- FIG. 12. A Catkin.

PLATE VII.

LEAVES.

- | FIG. | FIG. |
|---------------------------|---|
| 1. Round. | 27. Barbed. |
| 2. Circular. | 28. Divided. |
| 3. Egg-shaped. | 29. Serpentine (at the edge.) |
| 4. Oval. | 30. Toothed. |
| 5. Oblong. | 31. Serrated. |
| 6. Spear-shaped. | 32. Doubly serrated. |
| 7. Strap-shaped. | 33. Doubly scalloped. |
| 8. Awl-shaped. | 34. Sharply scalloped. |
| 9. Kidney-shaped. | 35. Bluntly scalloped. |
| 10. Heart-shaped. | 36. Sharply notched at the end. |
| 11. Crescent-shaped. | 37. Plaited. |
| 12. Triangular. | 38. Scalloppe. |
| 13. Arrow-shaped. | 39. Blunt. |
| 14. Heart-arrow-shaped. | 40. Acute. |
| 15. Halberd-shaped. | 41. Tapering to a point. |
| 16. Notched at the end. | 42. Blunt, but ending in a point. |
| 17. Three-lobed. | 43. Fringed. |
| 18. Bitten. | 44. Veined. |
| 19. Gashed. | 45. Triangularly spear-shaped. |
| 20. Five-cornered. | 46. Fibrous. |
| 21. Gnawed. | 47. Growing by threes upon leaf-stalks. |
| 22. Hand-shaped. | 48. Finger-like. |
| 23. Winged Clefts. | 49. Bird-footed. |
| 24. Jagged. | 50. In pairs. |
| 25. Indented. | 51. By threes. |
| 26. Indented and toothed. | |

PLATE VIII.

LEAVES.

- | FIG. | FIG. |
|---|---|
| 52. Winged, with an odd leaflet at the end. | 60. Triply winged, without an odd leaflet at the end. |
| 53. Abruptly winged. | 61. Triply winged, with an odd leaflet at the end. |
| 54. Winged, with the leaflets alternate. | 62. Lyre-shaped. |
| 55. Interruptedly winged. | 63. Lopped at the end. |
| 56. Doubly winged. | 64. Battledore-shaped. |
| 57. Doubly three-fold. | 65. Wedge-shaped. |
| 58. Winged, and terminated by a tendril. | 66. Waved at the edge. |
| 59. Triply three-fold. | 67. Curled. |
| | 68. Cylindrical. |
| | 69. Inversely heart-shaped. |

PLATE IX.

DISPOSITION AND DIRECTION OF LEAVES.

- FIG. 1. Leaves in cross pairs.
 FIG. 2. Tiled Leaves.
 FIG. 3. *a. a.* A jointed Leaf.
 b. b. Starry Leaves.
 c. c. Leaves growing by fours.
 d. d. d. d. Leaves alternate. In fig. 5, all the Leaves are opposite.
 e. Chaffy Leaves.
 f. Leaves in a bundle.
 FIG. 4. *a. a.* A Target-shaped Leaf.
 b. A Leaf with its Leaf-stalk, *c.*
 d. A sessile Leaf.
 e. A decurrent Leaf.
 f. A Leaf embracing the Stem.
 g. A perforated Leaf.
 h. h. United Leaves.
 i. A sheathing Leaf.
 FIG. 5. *a. a.* Leaves bent inwards.
 b. b. Upright Leaves.
 c. c. Expanding Leaves.
 d. d. Horizontal Leaves.
 e. e. Reclining Leaves.
 f. f. Reflexed, or rolled back Leaves.
 m. An Auxiliary Fruit-Stalk.
 FIG. 6. Leaves pressed to (the Stem.)
 FIG. 7. Root-leaves; *a.* the Root; *b. b. b.* the Leaves rising immediately out of it, without the intervention of any Stem.
 FIG. 8. *a. a.* Floral Leaves; different from *b. b.* the other Leaves of the plant; *c.* a Fruit-stalk.

PLATE X.

WEAPONS.

- FIG. 1. *a. a. a. a.* Simple thorns. FIG. 2. *a. a.* Simple Prickles.
 b. b. b. A triple Thorn. *b. b.* Forked or triple prickles.

STEMS, &c.

- FIG. 3. A jointed Straw. (*a. a. a.*) FIG. 6. *a. a.* A Tendril.
 The Joints. *b. b.* Stipule.
 FIG. 4. A forked Stem. *c. c.* Concave Glands.
 FIG. 5. A twining Stem. FIG. 7. A creeping Root.
 FIG. 8. A creeping Stem.

PLATE XI.

FIG. 1. *a. a. a. a.* Glands supported upon Foot-stalks.

ROOTS.

FIG. 2. A coated bulbous Root, cut a-cross, to show the Coats which compose it.

FIG. 3. A solid bulbous Root.

FIG. 4. A scaly bulbous Root.

FIG. 5. A branching Root.

FIG. 6. A Spindle, or Carrot-shaped Root.

FIG. 7. A tuberous Root.

(FIG. 8. A dwarf specimen of *Campanula glomerata*, a species more commonly attaining eighteen inches, or two feet in height. E.)

PLATE XII.

BOTANICAL MICROSCOPE.

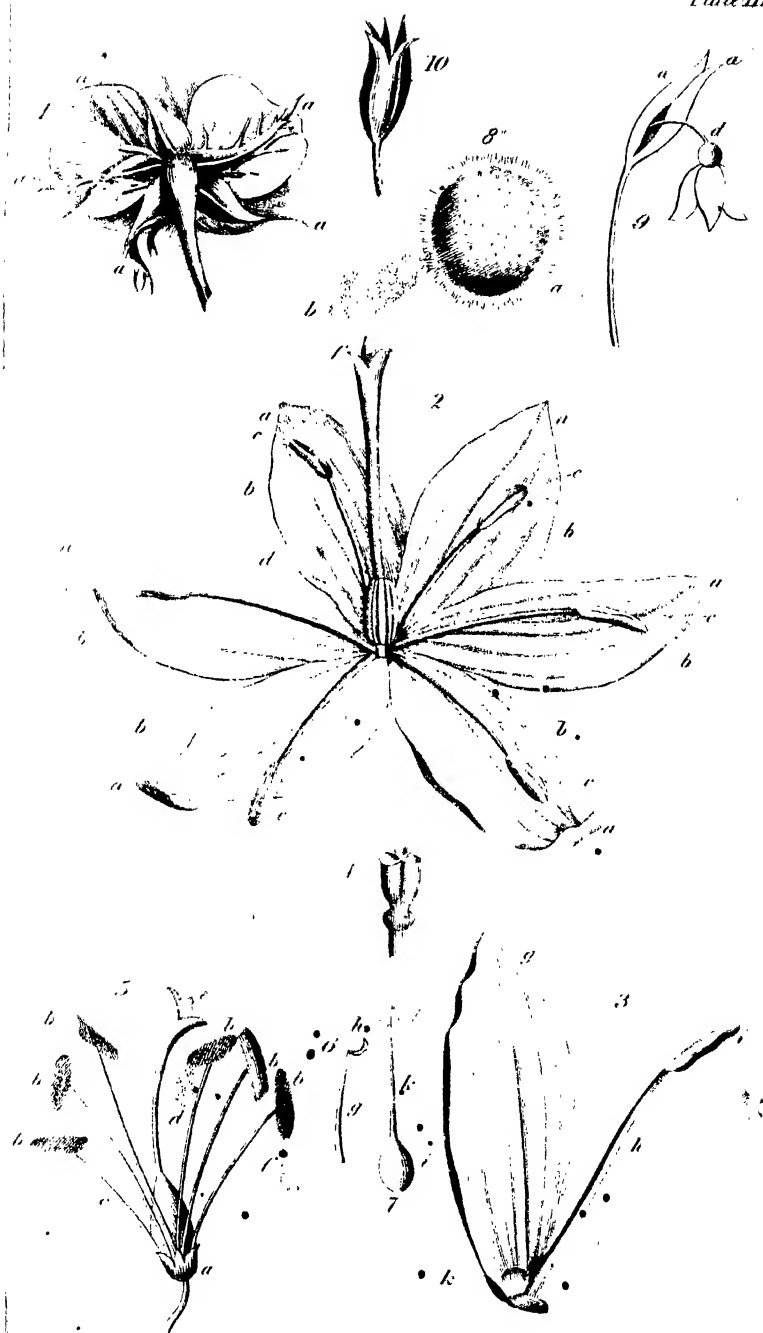
FIG. 1. Represents the Botanical Microscope in its improved state.

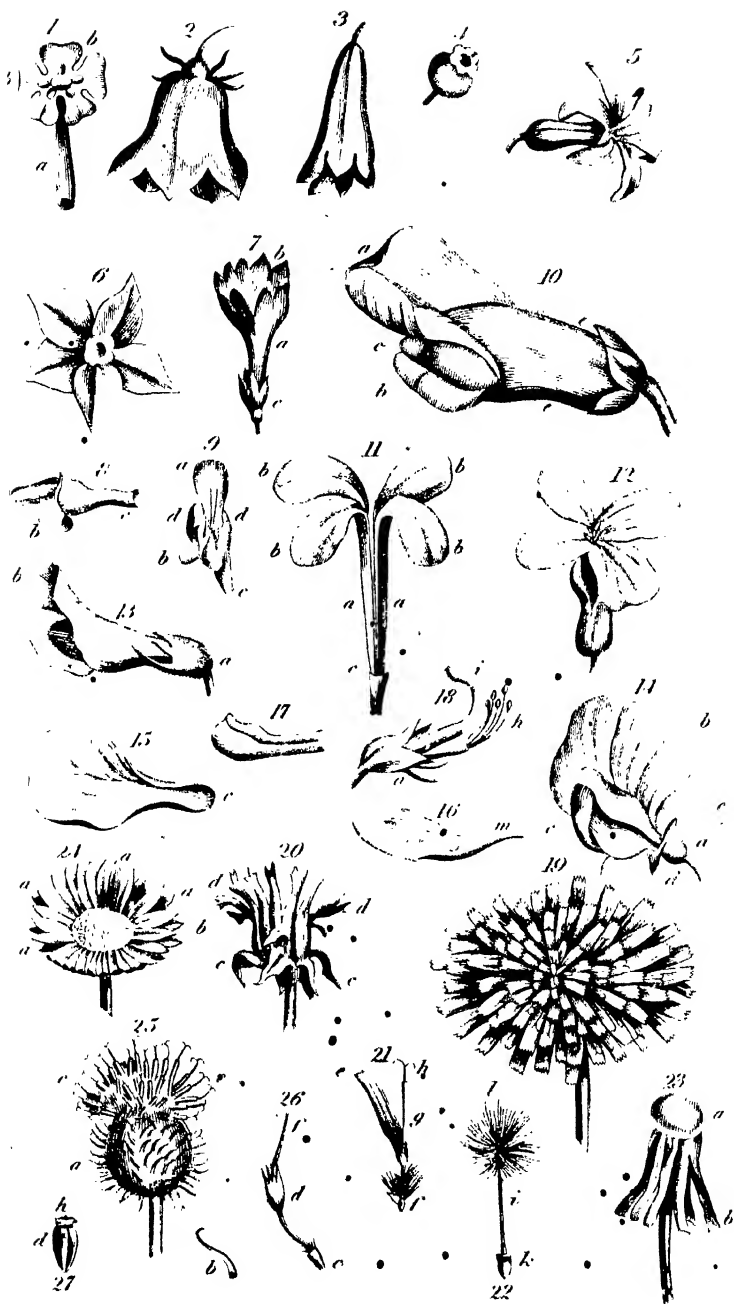
FIG. 2. Is a Magnifying Glass, to be held in the hand, and applied close to the eye, whilst the object to be examined is brought immediately under it, at such a distance as shall be found to give the most distinct vision.

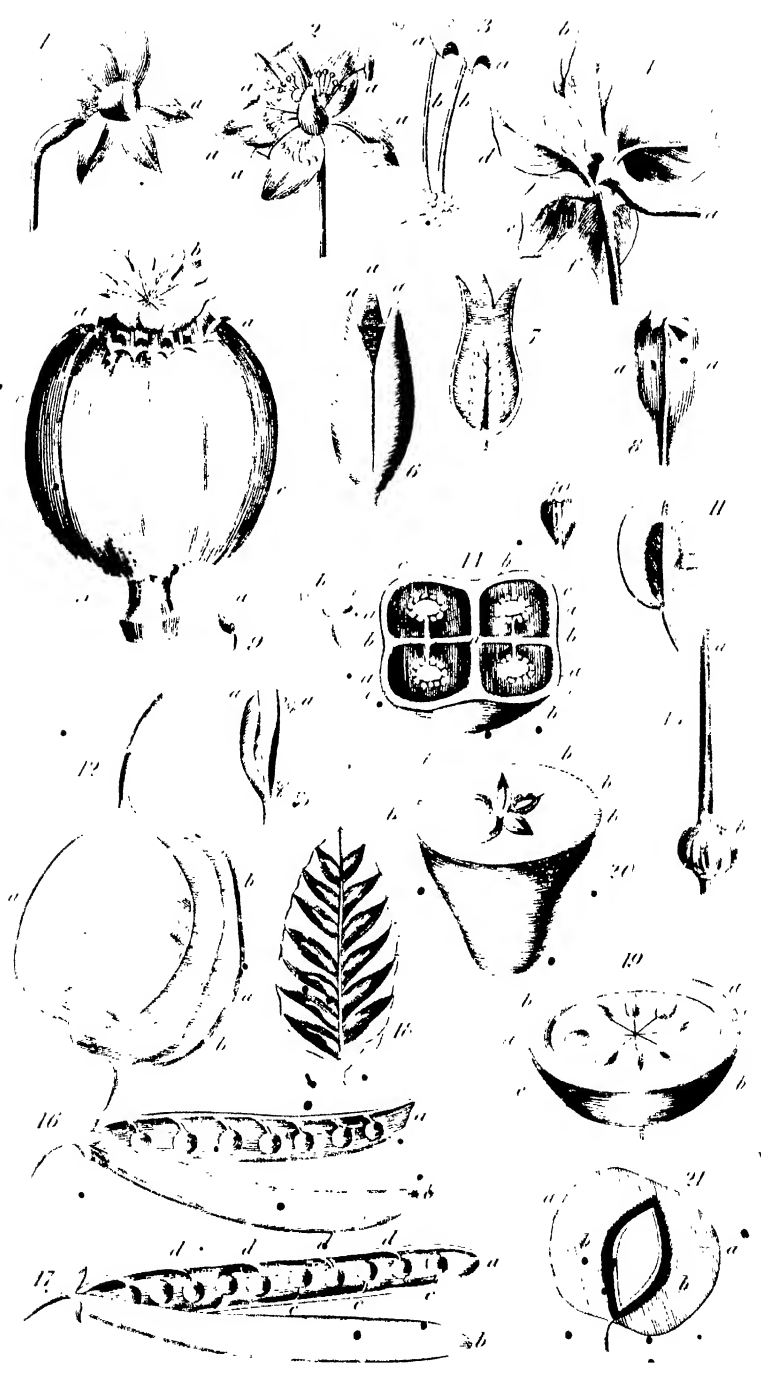
FIG. 3. Shows the Dissecting Knife, the Triangular Needle, and a pair of small steel Pliers. These instruments are useful in the dissection of flowers, even when the plants are so large as not to require magnifying.

When the parts in question are very minute, and require a nice and careful dissection, place the Microscope upon a table, and raise it, if necessary, on a book or two, so that the eye may be applied with ease immediately over and close to the glass (*b.*). Lay the object to be examined on the dark stage (*a.*) and turn the screw at (*c.*) until you see the object upon the stage perfectly distinct. With the needle in the left, and the knife in the right hand, the elbows resting on the table, proceed in the dissection at the same time that the eye is applied to the glass (*b.*)

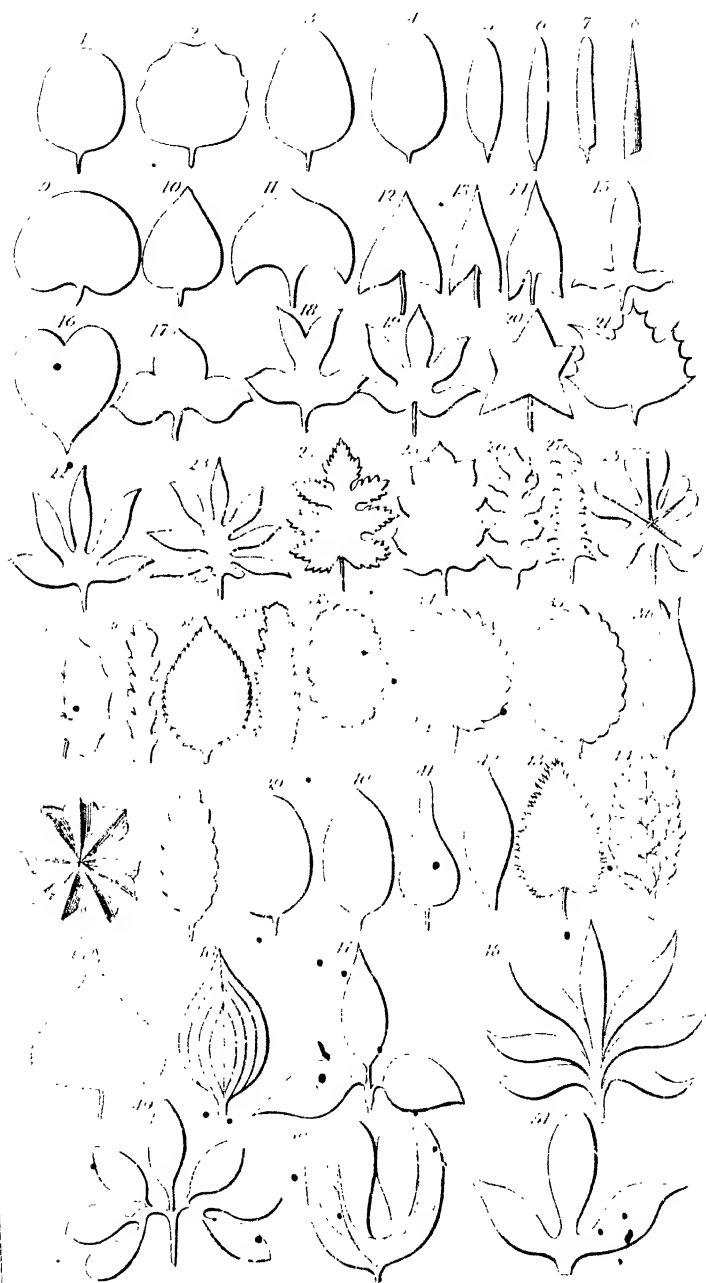
When the Microscope is to be closed, the instruments and the hand-glass are put into the cells destined to receive them, the whole forming a shape and size convenient for the pocket.

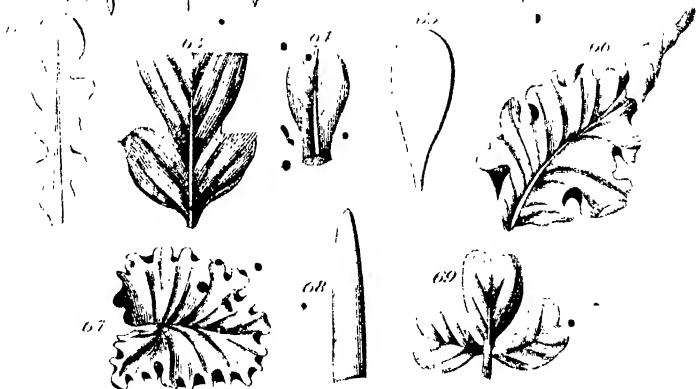
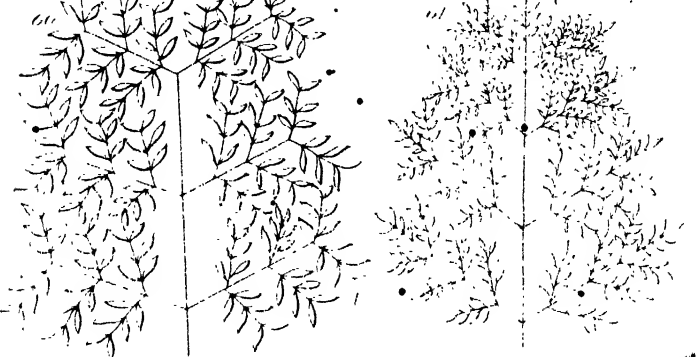
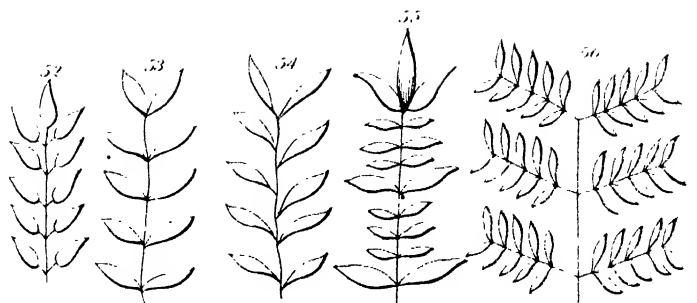


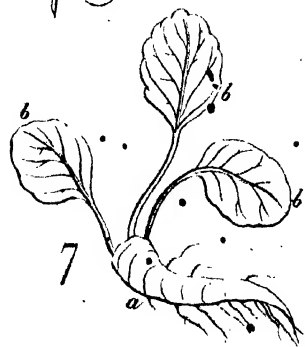
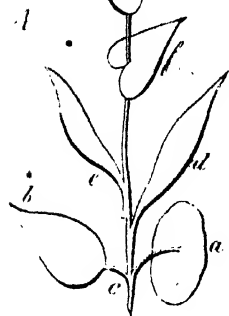
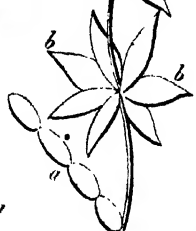
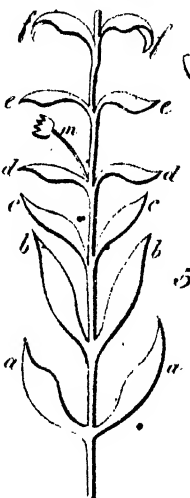
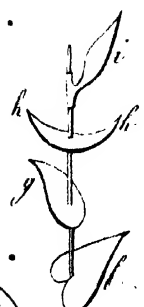
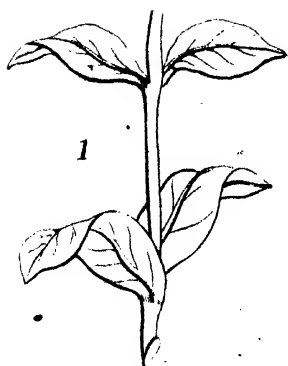


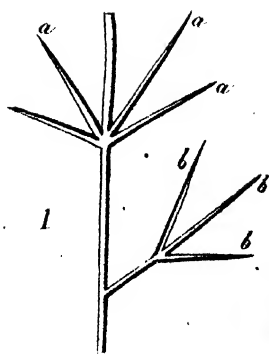




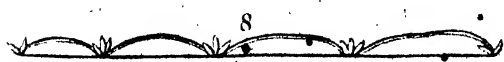
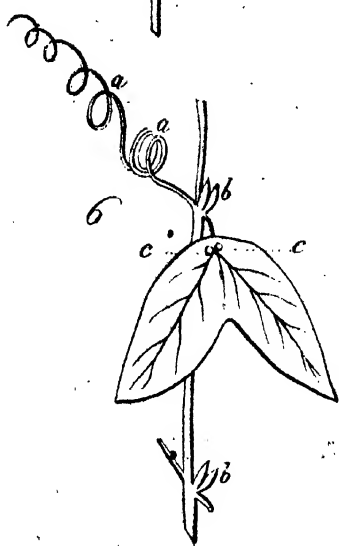
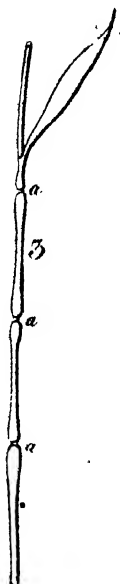
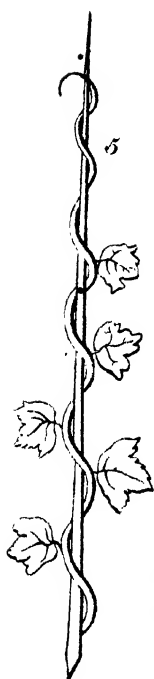
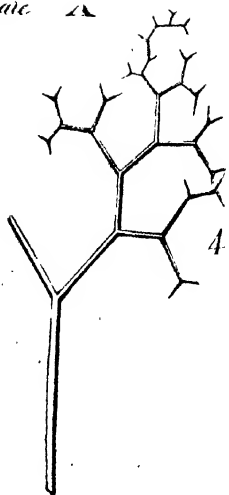


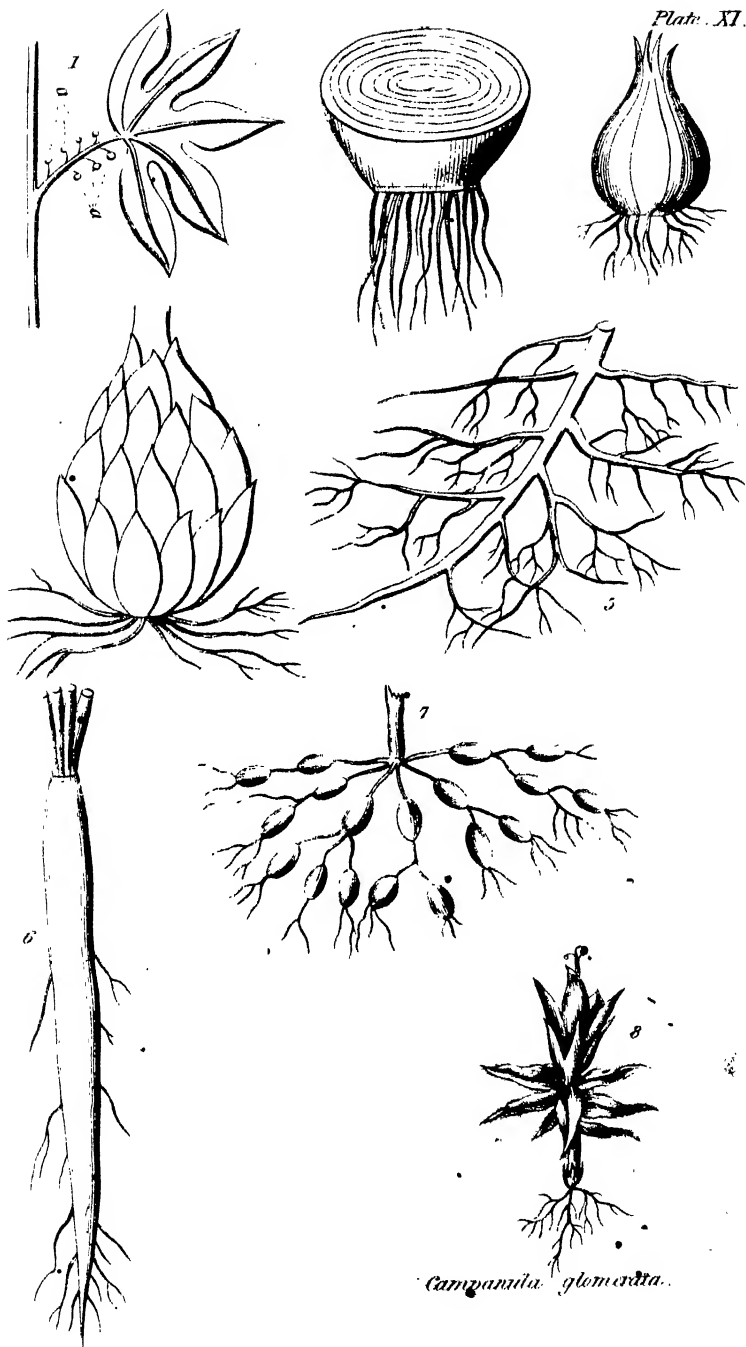






Male





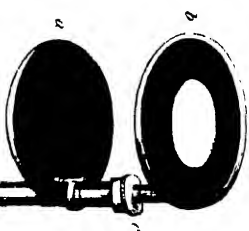


Fig. 1.

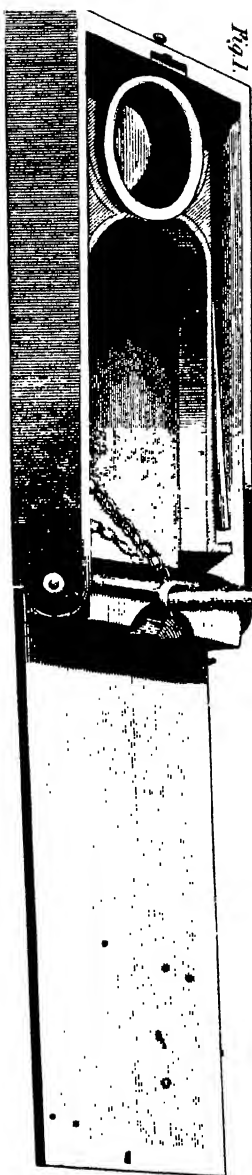


Fig. 3.



CATALOGUE OF BOOKS,

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 Adanson. Adanson Familles des Plantes. Tomes II. 8vo.
 Allion. Fl. Allionii Flora Pedemontana. Tom. III. fol. 1785.
 Allion. Stirp. Ped. Allionii Rariorum Pedemontii Stirpium Specimen I. 4to. 1755.
 Alpin. Egypt. 1. Alpini Historia Egypti Naturalis, Pars I. et II. 4to. 1735.
 Amman. Ammani Stirpium Rariorum in Imperio Rutheno sponte provenientium Icones et Descriptiones. 4to. 1739.
 Amoen. Acad. Amoenitates Academicæ, seu Dissertationes variæ Physicæ, Medicæ, Botanicæ. Tomi IX. 8vo. 1785.
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 Asso. Asso Synopsis Stirpium Arragoniæ. 4to. 1779.
 Barr. Barrelieri Plantæ per Galliam, Hispaniam, et Italiam observatæ, Iconibus Aeneis expressa, fol. 1714.
 (Barton. Compendium Floræ Philadelphicæ. Tom. II. 12mo. 1818. E.)
 ———. Vegetable Materia Medica of the United States. 2 vols. 4to. 1818. E.)
 Bast. Basteri Opuscula Subseciva. 4to. Tom. I. 1762.—II. 1765.
 Bath Society. Letters and Papers on Agriculture.—Vol. 8vo.
 Batsch. Elenchus Fungorum, Fasc. III. 4to. 1789.
 Battar. Battarre Fungorum Agri Ariminensis Historia. 4to. 1759.
 Belev. Opusculæ (published by M. Broussonet,) 1785, 8vo.
 Bellon. Bellonii Observationes in Chys. Exot.
 Bergen de Aloide. Francof. ad Viadr. 1753. 4to.
 Bergen Flora Francofurtanæ. 1750. 12mo.
 Bergii Materia Medica. 8vo.
 Berkenhout's Clavis Anglica Linguae Botanice Linnaei, or Botanical Lexicon. 1766. 12mo.
 ———. Outlines of the Natural History of Great Britain and Ireland. Vol. II. 1770. 8vo.

- Blackst.* Blackstone Specimen Botanicum quo Plantarum plurimum Rariorum Angliæ indigenarum Loci Natalis illustrantur. 12mo. 1746.
- Blackst. Cat.* Blackstone Catalogus Plantarum circa Harefield. 1737. 8vo.
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- Blair's Botanic Essays.* 8vo. London. 1720.
- Boccon. Rar.* Boccone Icones et Descriptiones Rariorum Plantarum Siciliæ, Melitæ, Galliæ, et Italiæ. 4to. Oxon. 1674.
- Boehm.* Boehmeri, Flora Lipsiæ Indigena. 1720. 4to.
- Boerh.* Boerhaavii Index alter Plantarum quæ in Horto Academico Lugduno Batavorum aluntur. Pars I. 1720. 4to.
- Bolt.* Bolton's Filices Britannicæ, or History of British Proper Ferns. 1786. 4to. By James Bolton, of Halifax. Appendix to the above. 4to. 1790.
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- (Bot. Guide.* The Botanist's Guide, by Messrs. Turner and Dillwyn. 2 vols. 12mo. E.)
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- Nomenclator* Botanicus. Lipsiæ. 1782. 8vo.
- Park. Par.* Parkinson's Paradisus Terrestris, or a Garden of all Sorts of pleasant Flowers, &c. 1629. fol. *
- Park.* Parkinson's Theatrum Botanicum; the Theatre of Plants. 1640. fol.
- Pena.* See Lobel.
- Penn. Scoll.—Hebr.—Wales.* Pennant's Tours in Scotland and Wales, and Voyage to the Hebrides.
- (*Pers.* Synopsis Methodica Fungorum. Auctore D. C. H. Persoon. E.)
- (*Perry.* Plantæ Warwicensis Selectæ; or Botanist's Guide through the County of Warwick. By W. G. Perry. 8vo. 1820. E.)
- Pet.* Ray's English Herbal illustrated by Figures, by James Petiver, (composing the former half of the Second Volume of his works in fol.)
- Pet. Concord.* Graminum, Muscorum, Fungorum, Submarinorum, &c. Britannicorum Concordia; a Methodical Concordance of British Grasses, &c.
- Pet. Gaz.* Petiver Gazophylacium Naturæ et Artis.

- Pet. Mus.* Museum Petiverianum, 1695. 8vo.
- Pet. Pter.* Petiveri Pterigraphia. In the latter half of the Second Volume of his Works.
- (*Phéllips's Sylva Florifera.* 2 vols. 8vo. 1823. E.)
- Phil. Bot.* Linnæi Philosophia Botanica. 1751. 8vo.
- Phil. Trans.* Philosophical Transactions. London.
- Phytologia Britannica.* 1650. Lond. 12mo.
- Pitt.* General View of the Agriculture of the County of Stafford, by Mr. William Pitt. 4to. 1795.
- Plot Oxf.* Plot Historia Naturalis Oxoniensis. fol.
- Plot Staff.* Plot's Natural History of Staffordshire. 1686. folio.
- Pluk.* Plukenetii Phytographia. 1691. Tom. I. of his Works in Vol. IV. 1769. 4to; and the latter ends of Tom. III. and IV.
- Pluk. Alm.* Plukenetii Almagestum Botanicum. 1696. Tom. II. of his Works.
- Pluk. Amalth.* Plukenetii Amaltheum Botanicum, 1705. Tom. IV. of his Works.
- Pluk. Mant.* Plukenetii Almagesti Botanici Mantissa. 1700. Tom. III. of his Works.
- Pollich Historia Plantarum in Palatinatu Electorali sponte crescentium.* Tomi III. 1777. 8vo.
- (*Pulteney.* A Catalogue of the more rare Plants of Dorsetshire, by Richard Pulteney, M.D.F.R. and L.S. 1799. fol. E.)
- (*Purt. Mid. Fl.* A Midland Flora; or Description of British Plants in the Midland Counties, by T. Purton, Surgeon; with coloured Engravings, 8vo. Vol. I. and II. 1817. Vol. III. 1821. E.)
- R. Syn.* Raii Synopsis Methodica Stirpium Britannicarum, Editio 3tia 1724. 8vo.
- R. Cat.* Raii Catalogus Plantarum Angliæ et Insularum adjacentium. Ed. I. 1670; Ed. II. 1677. 12mo.
- R. Hist.* Raii Historia. Tomi III. 1686, and 1704. fol.
- Reich. Fl.* Reichard Flora Moeno-Francofurtana enumerans Stirpes circa Francofurtum ad Moenum crescentes. Pars I. 1772; Pars II. 1778.
- Reich. Hort.* Reichard Enumeratio Stirpium Horti Botanici Senkenbergiani qui Francofurti ad Moenum est. 1782. 12mo.
- Reich.* Reichard Syst. Plant. Linn. 4 vols. 8vo. 1780.
- Reich. Syl.* Reichard Sylloge Opusculorum Botanicorum. 1782. 8vo.
- Relh.* Relhani Flora Cantabrigiensis exhibens Plantas Agro Cantabrigiensi Indigenas. 1785. 8vo.
- Relh. Suppl.* Relhani Floræ Cantabrigiensi Supplementum. 1786. 8vo. Ibid. alter. 1788.
- Renealmi Specimen Historiæ Plantarum.* 1611. 4to.
- Retz. Fl.* Retzii Floræ Scandinaviæ Prodromus. 1779. 8vo.
- Retz. or Retz. Obs.* Retzii Observationes Botaniciæ. Fasc. VI. folio.
- Reyg.* Reyger Tentamen Floræ Gedanensis. Dantsici 1764. 12mo.
- Riv.* Rivini Ordines Plantarum Floræ Monopetalo, et Tetrapetalo. Lipsiæ. 1690 and 1691. fol.
- Riv. Pent.* Rivini Ordo Plantarum Floræ Irregulari Pentapetalo. Lipsiæ. 1696. fol.

- Roi.* Du Roi Dissertatio Inauguralis, Observationes Botanicas sistens. 1771. 4to.
- Rose's* Elements of Botany. 1775. 8vo.
- Roth. Betyr.* Roth Betyrage zur Botanick Bremen. 1782. 12mo.
- Roth. Vers.* Roth verzeichniss Dergenigen Pflanzen. Altenburg. 1781. 12mo.
- Rousseau's* Letters on Botany, by T. Martyn, B.D. 1785. 8vo.
- Rottb.* Rottböll Descriptionum et Iconum Rariores et pro maxime parte Novas Plantas illustrantium. 1773. fol.
- Rüling* Ordines Naturales Plantarum. Goetting. 1774. 8vo.
- Ruppi* Flora Jenensis, sive Enumeratio Plantarum tam sponte circa Jenam et in locis vicinis nascentium, quam in Hortis obviarum. 1726. 12mo.
- Rupp. Ab. Hall.* Ruppri Flora Jenen. edente Hall. 1745. 12mo.
- Rutty's* Essay towards a Natural History of the County of Dublin. 2 vols. 1772. 8vo.
- Sabbat.* Sabbati Hortus Romanus secundum Systema Tournefortii. Tom. IV. 1772—1777. folio.
- (Salisbury.* The Botanist's Companion; or an Introduction to Practical Botany, by W. Salisbury, of the Botanic Garden, Sloane-street. 2 vols. London, 1816. E.)
- Schæff.* Schæffer Fungorum qui in Bavaria et Palatinatu circa Ratisbonam nascuntur Icones. Tomi IV. 1762 to 1774. 4to.
- Scheuch.* Scheuchzeri Agrostographia, sive Graminum, Juncorum, Cyperorum, Cyperoidum, iisque affinium Historia, edente Hallero. 1775. 4to.
- Scheuch. It.* J. Jacobi Scheuchzeri Itinera per Helvetiæ Alpinas Regiones. 1723. 4to.
- Schmid.* Schmidel Icones Plantarum et Analyses Partium, curante et edente Keller, Pictore Norimbergensi. 1762. fol.—Manipulus II. curante et edente Bischoff, Chalcographo Norimbergensi. 1776. fol.
- Schmid. Blas.* Schmidel de Blasia, 1759. 4to.
- Schmid. Buxb.* Schmidel de Buxbaumia. 1758. 4to.
- Schmid. Jungerm.* Schmidel de Jungermannia, 1760. 4to.
- Scholler* Flora Barbiensis. Lips. 1775. 8vo.
- Schreb.* Schreber Beschreibung der Graser. Plates 1. to 40. Leips. 1774. fol.
- Schreb.* Linn. Gen. Pl. curante, C. D. Schreber. Tom. I. 1789, et II. 1791.
- Schreb. Ic.* Schreber Icones et Descriptiones Plantarum minus cognitarum. Decas I. 1756. fol.
- Schreb. Mant.* Schreber Mantissa Editioni Quartæ Linnæi Materie Medicæ. 1782. 8vo.
- Schreb. Phasc.* Schreber de Phasco. 1780. 4to.
- Schreb. Spic.* Schreberi Spicilegium Floræ Lipsicæ. 1771. 8vo.
- Schreb. Vert.* Schreberi Plantarum Verticillatarum Unilabiatarum Genera et Species. 1774. 4to.
- Scop.* Scopoli Flora Corniolica exhibens Plantas Carniolie Indigenas. Tomi II. 1772. 8vo.

- Scop. Ann.* Scopoli Annus I. II. et III. Historico-Naturalis. 1769; IV. 1770; V. 1772. small 8vo.
- Scop. Subt.* Scopoli Plantæ Subterraneæ. 12mo.
- Scopoli.* Introductio ad Hist. Naturalem. 8vo. Pragæ. 1777.
- (*Scot. Crypt. Fl.* Scottish Cryptogamic Flora, coloured Figures belonging chiefly to the Order Fungi, by R. Kaye Greville, Esq. F.R.S.E. 8vo. Nos. 1—20. 1822—1824. E.)
- Seguieri* Plantæ Veronensis, seu Stirpium quæ in Agro Veronensis reperiuntur Methodica Synopsis. Tomus II. 1745. 8vo.
- Sheldr.* Sheldrake's Herbal of Medicinal Plants. fol.
- Sibbald.* Sibbaldi, Scotia Illustrata. fol. 1684.
- Sinclair.* Flora Oxoniensis. 8vo.
- (*Sinclair's* Hortus Gramineus Woburnensis, 1 vol. 8vo. 1824. Plates. E.)
- Smith, Sir J. E. M. D.* Dissertation on Sexes of Plants. 8vo.
- (Flora Britannica, Vol. 1. 2. 3. 8vo. E.)
- English Botany: the Figures by J. Sowerby. Nos. 8vo.
- (English Flora: Vol. 1. 2. 3. 8vo. E.)
- Spicilegium Botanicum. Fasc. iii. fol.
- Icones Pictæ Plantarum Rariorum. Fasc. fol.
- Icones Plantarum Ineditæ. Fasc. iii. fol.
- Tour on the Continent. 3 vols. 8vo. 1793.
- (Grammar of Botany. 1 vol. 8vo. 1821. E.)
- (Introduction to Botany. 1 vol. 8vo. 1814. E.)
- Sole.* Menthæ Britannicæ; or a new Arrangement of British Mints, by W. Sole. 1 vol. fol. 1798.
- Sowerby.* Coloured Figures of English Fungi, by James Sowerby, F.L.S. fol.
- Spalowsky* Dissertatio Inauguralis de Cicuta, Flammula Jovis, Aconito, Pulsatilla, Gratiola, Dictamno, Stramonio, Hyoscyamo, et Colchico. 1777. 8vo.
- Sp. Pl.* Linnæi Species Plantarum, exhibentes Plantas rite cognitæ ad Genera relatas. Editio 2da. Tom. I. 1762; II. 1763. 8vo.
- Stackh.* Nereis Britannicæ; or Descriptions of British Marine Plants. fol. 1795, by J. Stackhouse, Esq.
- Stechmann de Artemisia.* 1775. 4to.
- Stilling.* Stillingfleet's Miscellaneous Tracts. 1762. 8vo.
- (*Strutt. Sylv. Brit.* Sylva Britannica; a History of British Forest Trees, by George Strutt, in Twelve Parts, fol. 50 Plates. 1824. E.)
- (*Sylv. Florif.* Sylva Floriferæ; the Shrubbery, Historically and Botanically treated, by Henry Phillips, F.H.S. 2 vols. 8vo. 1823. E.)
- Stoerck.* See Spalowski.
- Swayne.* See Gram. Pascua.
- (*Swediaur.* Materia Medica, Auctore F. Swediaur, M.D. Paris. An. 8. E.)
- Swert.* Swertii Florilegium. Tomi II. fol. Frank. 1612.
- Symons.* Synopsis Plantarum Insulis Britannicis Indigenarum; curante J. Symons, A.B. S.L.S. 12mo. 1798.
- Syst. Nat.* Linnæi Systema Naturæ. Ed. XII. Tomi III. 1766. and 1767. 8vo.
- Syst. Pl.* Linnæi Systema Plantarum, curante Reichard. Tomi IV. 1779 and 1780. 8vo.

- Syst. Veg.* Linnæi Systema Vegetabilium. Editio XIV. Murray. 1784.
- Thal.* Thalii Sylva Hercynia, sive Catalogus Plantarum sponte nascentium in Montibus et Locis Vicinis Hercyniæ quæ respicit Saxoniam, 1588. small 4to. (published with Camerarii Hort.)
- Theoprasti Opera.* Lugdun. Batav. fol.
- (*Thomson's Lect.* Lectures on the Elements of Botany: by A. Todd Thomson, F.L.S. 8vo. 1822. E.)
- Thunb.* Thunberg Flora Japonica. 1784. 8vo.
- Tilli* Catalogus Plantarum Hort. Pisani. 1723. fol.
- Tourn.* Tournefort Institutiones Rei Herbariæ. Tom. III. 1700. 4to.
- Trag.* Tragi de Stirpium maxime vero earum quæ in Germania nascuntur Commentarii, interprete Kybero. 1552. small 4to.
- Tren. Rar.* Plantæ Rariores edente Keller. 1763. fol.
- Trem.* Editor of the Nuremberg Edition of Blackwell. See Blackwell.
- (*Turn. Hist.* History of the Fuci, by Dawson Turner, A.M. F.R.S. and L.S. 4to. E.)
- Vaill.* Vaillant Botanicon Parisiense, ou Denombrement par Ordre Alphabetique des Plantes qui se trouvent aux Environs de Paris. 1727. fol.
- Vandelli.* Fasciculus Plantarum. 4to. 1771.
- Vell.* Coloured Figures of Marine Plants, with Descriptions, by T. Velley, Esq. Bath, 1795. fol.
- Volck.* Volckameri Flora Noribergensis, sive Catalogus Plantarum in Agro Noribergensi tam sponte nascentium, quam exoticarum in Viridariis ac Medico-Horto enutritarum. 1700. 4to.
- Walc.* Walcott Flora Britannicæ Indigena. No. I. to XIV.
- Wallace.* Account of Orkney. 8vo. Lond. 1700.
- Walther.* Designatio Plantarum quas Hortus Waltheri Pathologiæ Professoris Lipsiensis complectitur. 1735. 8vo.
- Warner* Plantæ Woodfordiensis; a Catalogue of the more perfect Plants growing spontaneously about Woodford in Essex. 1771. 12mo.
- Weber.* Weberi Spicilegium Floræ Gottingensis Plantas imprimis Cryptogamicas Hercyniæ illustrans. 1778. 8vo.
- (*Welsh Bot.* Welsh Botany; a Catalogue of the Native Plants of the Isle of Anglesey, in Latin, English, and Welsh; by Hugh Davies, F.L.S. 8vo. 1813. E.)
- Werner.* Observationes Botan. 4to.
- Weig. Fl.* Weigel Flora Pomerano-Rugica exhibens Plantas per Pomeraniam Anteriorem Suecicam et Rugiam sponte nascentes. 1769. 12mo.
- Weig. Hort.* Weigel Hortus Gryphicus. 1782. 4to.
- Weig.* Weigel Observationes Botanicae. 1772. 4to.
- Weis* Plantæ Cryptogamicæ Floræ Gottingensis. 8vo. 1770.
- Wiggers* Primitiæ Floræ Holsaticæ. 1780. 8vo.
- Wilcke* Flora Gryphica exhibens Plantas intra Miliare, sponte nascentes. 1765. 12mo.
- Willdenow.* Flora Berolinensis. 8vo.
- Willich Obs.* Willich Observationes Botanicae de Plantis quibusdam Observationes. Gotting. 1762.

- Willch Ill.* Willch Illustrationes quædam Botanice. Gotting. 1766.
 (Winch. The Botanist's Guide through the Counties of Northumber-
 land and Durham, by Nat. John Winch, Esq. F.L.S. E.)
 (——— Essay on the Geographical Distribution of Plants: by N. J.
 Winch. Second Edit. 1825. E.)
 (Winch. Remarks on the Flora of Cumberland: by N. J. Winch. E.)
Woodv. Woodville's Medical Botany. 4 vols. 4to. 1793.
Wulff. Flora Borussica. 1765. 8vo.
Zanon. Zanonii Rariorum Stirpium Historia, edente Montio. Bonon.
 1742.
Zinn. Catalogus Plantarum Horti Academici et Agri Gottingensis. 1757.
 8vo.

* * * "Now rather let us read
 The LIVING PAGE, whose every character
 Delights, and gives us wisdom."

* * * * *
 * * * * *
 * * * * *

"Not a tree,
 A plant, a leaf, a blossom, but contains
 A folio volume. We may read, and read,
 And read again, and still find something new,
 Something to please and something to instruct." (L.)

ABBREVIATIONS

- CAL.** Calyx.
BLOSS. Blossom.
STAM. Stamen.
PIST. Pistil.
FILAM. Filament.
S. VESS. Seed-vessel.
GERM. Germen.
CAPS. Capsule.
NECT. Nectary.
RECEPT. Receptacle.
ESS. CHAR. Essential Character.
A. Annual ; enduring for a year or less.
B. Biennial ; enduring two years.
P. Perennial ; enduring many years.
S. Shrub.
T. Tree.
Jan. January.—**Feb.** February.—**Aug.** August.—**Sept.** September.—
Oct. October.—**Nov.** November.—**Dec.** December.
M. Male, or stameniferous flower.
F. Female, or pistilliferous flower.
H. Hermaphrodite flowers ; such as contain both stamens and pistils.
N. Neutral flowers ; such as contain neither stamen nor pistil.
Involucr. Involucrum.
Involucell. Involucellum.

R U L E S

FOR THE

PRONUNCIATION OF THE LINNÆAN NAMES.

1. THE English reader is desired to observe, that the accent, or the force of the voice, is to be thrown upon that syllable or letter which precedes the mark. Thus in *Ar'butus*, the *Ar* is to be the accented or strongly sounded syllable, and not the *bu*, as is commonly, though erroneously, the case; and in *Vroni'ca*, the *ni* is to be the accented syllable, and not the *ro*, which is also a common error.
2. That the letter *e* at the end of a name is always to be sounded; thus, the word *Elat'ine*, is to be pronounced *E-lat-ti-ne*, with four syllables, and not *E-la-tine*.
3. That in words ending in *ides*, the *i* is always to be pronounced long.
4. That *ch* is to be pronounced *hard*, like the letter *k*.
5. That in words beginning with *sce* and *sci*, the *c* is to be pronounced *soft*; though it is allowed that some few words derived from the Greek are exceptions to this rule.
6. That in such words as have *sch*, the *c* is to be pronounced *hard*. Thus *Schæ'nus* is to be pronounced as if it were written *Ské-nus*.
7. That *c* and *g*, before *e* and *i*, and before *æ* and *œ*, are to be pronounced *soft*, but before the other vowels and diphthongs, *hard*.

(“ Nisi in Ordines redigantur PLANTÆ, et velut castrorum acies distribuantur in suas Classes, omnia fluctuari necesse est.” CÆSALPINUS.

“ Methodus anima Scientiæ.” LINNÆUS.

Method is the soul of Science.

“ However dull and intricate these DESCRIPTIONS may appear upon paper, study them with the living PLANT in your hand, and, like an enchanter's wand, it will at once change a barren and dreary prospect into a garden of refreshing verdure and serene delight.” BRIT. BOT.—E.)

THE
GENERA
• OF
BRITISH PLANTS.

CLASS I.

MONANDRIA.

THE flowers arranged under this Class contain only one stamen. It might be supposed, that flowers containing only one stamen, and one, or at most, two pistils, must, from the simplicity of their structure, be easy to investigate; and undoubtedly they would be so, were it not for the minuteness of their parts. It fortunately happens, however, that the inexperienced Botanist is not likely to encounter them at the commencement of his progress; the *Salicornia* is only found on the sea coast; the *Hippuris* is not very common; the *Zenichellia* and *Chara* are less rare, and the *Callitriche* is frequent in watery ditches and very slow streams, but neither of them are likely to attract attention, until a habit of accurate observation has been formed.

MONANDRIA (One Stamen.)

MONOGYNIA (One Pistil.)

Chara.
Hippuris.
Salicornia.

DIGYNIA (Two Pistils.)

Callitriche.

TETRAGYNIA (Four Pistils.)

Zannichellia.

MONOGYNIA.

CHA'RA. (STONEWORT. E.) *Schmidel*. tab. 14. *Gartner*. tab. 84.

Male flower at the base of the female, on the outside the calyx.

CALYX none.

BLOSSOM none.

STAMEN. *Filament* none. *Anther* globular, placed before the germen on the outer side, and at the base of the calyx; of one cell, not opening.

Female flower.

CALYX. *Cup* four leaves; *leaflets* awl-shaped, unequal, permanent. Sometimes there is no calyx.

BLOSSOM none.

PISTIL. *Germen* turban-shaped, marked with five spiral grooves. *Style* none. *Summits* five, undivided.

SEED-VESSEL. *Berry* egg-shaped, but oblong, spirally grooved, of one cell, inclosing the seeds within a very thin crust.

SEEDS numerous, spherical, extremely small.

Obs. For Summits five, we should rather read with five clefts, as in the former editions of the Genera; but the parts are so very minute as scarcely to allow of this point being ascertained. In this doubtful case, the seed-vessel having only one cell, determines its place in the order Monogynia.

(From the obscurity of the fructification, the plants of this genus are now formed into an Order (*Characeæ*) of the Cryptogamia Class, by Messrs. Hooker, Greville, and some foreign Botanists. "Wholly aquatic: stems very slender, sometimes articulated, and in a few species furnished with a calcareous crust beneath the epidermis; no leaves, but whorls of short, simple, or compound branches resembling the stem." Grev. E.)

SALICORNIA. (JOINTED GLASSWORT. E.) *Tournefort*. 485. *Gartner*. 127.

CALYX four-cornered; lopped; distended; permanent.

BLOSS. none.

STAMEN. *Filament* single, undivided, longer than the cup. *Anther* double, oblong, upright.

PISTIL. *Germen* oblong-egg-shaped. *Style* undivided, standing under the stamen. *Summit* cloven.

S. VESS. none. The calyx inflated contains the seed.

SEED single.

Obs. The number of stamens is not certain; sometimes there are two in each flower. Linn.

HIPPU' RIS. (MARE'S-TAIL. E.) *Gærtn.* 84.

CALYX a two-lobed border, crowning the germen.

BLOSS. none.

STAMEN. *Filament* single, upright, fixed within the outer lobe of the calyx. *Anther* roundish, compressed.

PISTIL. *Germen* oblong, beneath. *Style* single, upright, awl-shaped, longer than the stamen, fixed to the inner lobe of the calyx. *Summit* acute.

S. VESS. none.

SEED single, roundish, naked.

Obs. Curtis describes the stamen as standing upon the top of the germen; and says, that at the close of the summer, he has found flowers without a stamen; and Scopoli has observed, that such flowers are sometimes intermixed with the others.

DIGYNIA.**CALLITRICHE.** (STAR-WORT. E.) *Gærtn.* 68.

CALYX none.

BLOSS. *Petals* two, bowed inwards, channelled, opposite to each other.

STAMEN. *Filament* single, long, bowed. *Anther* simple.

PIST. *Germen* nearly round. *Styles* two, hair-like, bowed. *Summits* acute.

S. VESS. *Capsule* roundish, compressed; with four angles, and two cells.

SEEDS solitary, oblong.

Obs. *Seeds* four, naked, with a membranaceous border on the outer edge. (*Gærtn.*)—In *Callitriche verna*, the stamens and pistils are found in separate flowers, but growing on the same plant. Linn. But sometimes even in this species, flowers are found which contain both stamens and pistils.

TETRAGYNIA.**ZANNICHEL' LIA.** (LAKE-WEED. E.) *Mich.* 34. *Gærtn.* 19.

Male flower.

CAL. none.

BLOSS. none.

STAM. *Filament* single, simple, long, upright. *Anther* arrow-shaped, upright.

Female flowers placed near the other.

CAL. *Cup* oboe leaf, hardly perceptible, distended, with three teeth.

BLOSS. none.

PIST. *Germen* four to eight, horned, approaching. *Styles* four to eight, simple, rather expanding. *Summits* egg-shaped, flat, expanding outwardly.

S. VESS. *Capsules* upright, but expanding; compressed crooked, tubercled on the back, the reclining style forming a beak; crust leather-like, of one cell, valveless.

SEED solitary, oblong, bulging on one side.

Male flowers solitary, scattered.

CAL. *Cup* of one leaf, mouth slanting, very entire, acute at the back.

Though we have for the present retained, in the following Class, the Linnean Genera of the *Orchideæ*, we here insert the very ingenious characters and novel arrangement of that curious tribe of plants, by Robert Brown, Esq. F.R.S. first published in the second edition of the *Hortus Kewensis*.

It has been suggested that some of these Genera approximate each other too nearly, (as may possibly be the case with *Habenaria* and *Gymnadenia*), points which may be reserved for future consideration.

MONANDRIA.

I. *Anther* united to the column somewhat terminal, permanent. *Pollen-mass* composed of angular granules, elastically cohering; fixed by its base.

ORCHIS. *Bloss.* gaping. *Lip* spurred on the under side at the base. *Glands* of the stalks of the pollen-mass (one or two) inclosed in one common little pouch.

GYMNADENIA. *Bloss.* gaping. *Lip* spurred on the under side at the base. *Glands* of the stalks of the pollen-mass naked, near together.

ACERAS. *Bloss.* gaping. *Lip* without any spur. *Glands* of the stalks of the pollen-mass inclosed in one common pouch.

HERMINIUM. *Bloss.* rather expanding. *Lip* without any spur. *Glands* of the stalks of the pollen-mass naked, distinct.

HABENARIA. *Bloss.* gaping. *Lip* spurred on the under side at the base. *Glands* of the stalks of the pollen-mass naked, distinct: (with the cells of the foot-stalks either connected or separate.)

OPHRYS. *Bloss.* rather expanding. *Lip* without any spur. *Glands* of the stalks of the pollen-mass inclosed each in a distinct pouch.

II. *Anther* parallel to the stigma, permanent. *Pollen-mass* either powdery, or composed of angular granules; fixed to the stigma by its extremity.

GOODYERA. *Bloss.* gaping; outer petals placed beneath the lip, which is gibbous on the under side, and undivided above. *Column* detached. *Pollen* angular.

NEOTIA. *Bloss.* gaping, outer petals embracing the lip, which is beardless; inner petals converging. *Column* without a border. *Pollen* powdery.

LISTERA. *Bloss.* irregular. *Lip* two-lobed. *Column* without a border. *Anther* inserted by its base. *Pollen* powdery.

III. *Anther* terminal, inserted, permanent. *Mass of Pollen* either powdery, or composed of angular granules; fixed by its base, or below the apex.

EPIPACTIS. *Lip* distended below; either undivided, or three-lobed, the extremity of the middle lobe the largest, connected, as it were, by a joint. *Pollen* powdery.

IV. *Anther* terminal, moveable, deciduous. *Mass of Pollen* at length becoming waxy.

MALAX'IS. *Lip* flattened, undivided, sessile, (often exterior). *Petals* five narrower, spreading or bending outwards. *Masses of Pollen* four, parallel, attached to the stigma by their extremities.

CORALLORRHIZA. *Lip* elongated at the base; with the spur connected or free. *Column* detached. *Masses of Pollen* four, oblique, (not parallel.)

N. B. The Species included in the above Genera will be given synoptically, and also cited synonymously in the Second Volume of this Work. E.)

CLASS II.

DIANDRIA.

THIS Class does not present any particular difficulty to the young Botanist, except such as arises from the singular structure of the flowers in the genera *Orchis*, *Ophrys*, *Serapias*, *Satyrion*, and *Cypripedium*; and this difficulty consists in distinguishing the lip of the nectary from the petals. A reference to the figures of *Orchis* and *Ophrys*, in plate XII. will elucidate the matter, and it is necessary it should be well understood, because the discrimination of the species depends very much upon the lip of the nectary. In explaining the structure of *Viola*, and some other genera, Linnæus considered the expanded lip of the nectary as one of the petals, and the horn-shaped projection behind it as the nectary. Had he done the same in the instances now under consideration, no peculiar difficulties would have arisen.

- Pl. XII. Fig. A. A front view of the flower of the *Orchis mascula*.
 B. A side view of the same.
p. p. p. p. The upper expanded petals, before, and within which, may be seen the inner approaching petals.
l. l. the lip of the nectary. *n. n.* its projecting horn.
g. the twisted germen. *m. m.* floral leaves.
 Fig. C. A front view of a flower of the *Ophrys myodes*.
 D. A side view of the same.
p. p. p. p. the petals.
l. l. l. l. the lip of the nectary.
g. the twisted germen.

In the five genera mentioned above, the stamens are evidently two.* The anthers are composed of a number of elastic fibres united together; so that they may be forcibly extended to twice their natural length, but on being released, they instantly contract again. (Mr. Brown observes that the flowers of the *Orchideæ* have their lower part, or lip, naturally placed inwards, but by a twist in their stalk or base of the germen, they are mostly turned half round.

Mr. Salisbury, in a paper in the seventh volume of the Linn. Trans. (illustrated by two series of figures of germination), is of opinion, that no parts of plants in the whole vegetable kingdom are more easily understood, than those employed in the propagation of this order. His ideas cannot be more briefly, and yet explicitly stated, than by the abstract in the Annals of Botany. The thick elongated body within the petals, is a true style, pervious through its whole length. The stigma, is broad and conspicuous, in the front of the top of the

* (Such has hitherto been the opinion of the generality of Botanists, but recently some authors have insisted that the *O. spheerulæ* have but one anther, opening with two cells. E.)

style. Many genera of this order are monandrous, but others diandrous, with sessile anthers. The true pollen is an elastic waxy substance, only differing in size and shape, from that of other vegetables; and when applied to the stigma, it never fails to impregnate the seeds which germinate in the greatest profusion, without any care, in the moist parts of a hot-house. The author thinks, that not only the plants of this natural order, but all *monocotyledonous* plants whatever, would be more accurately described as *acotyledonous*, the part they first send upwards having no analogy to the cotyledons of other vegetables. Such was likewise the opinion of Linnæus himself, in *Phil. Bot. and Prælect.* The experiments may be readily proved from specimens preserved in spirits of wine, as stated by Mr. Salisbery.

Sir J. E. Smith, following Professor Swartz, has latterly become a convert to the opinion that all the *Orchideæ* are monandrous, having "Stamens, or sessile Anther, one only;" except *Cypripedium*, which he still admits belongs to Diandria, "having a pair of very distinct double-celled Anthers." He further states, "the pollen of these plants forms yellow elastic masses, often stalked, in each cell of the Anther, and the cells are either parallel and close together, or removed from each other to the opposite side of the style; which serves to connect them, just as the filament does in many Scitamineous plants, alike therefore decided to be monandrous. Such a decision with regard to those, also, is justified by the analogy of other species, whose cells being approximated or conjoined, properly constitute but one Anther. The grand and absolute subdivision of the *Orchideæ* is justly founded by Dr. Swartz, after Haller, on the structure of the Anther, whether it be, as just described, *parallel*, or *vertical*, consisting of a moveable lid on the top of the style. The style of the *Orchideæ* has been called a column, a term superfluous: it is really a style, and the stigma is a moist shining space, generally concave, and situated in front of the style beneath the Anther."*

DIANDRIA (Two Stamens.)

MONOGYNIA (One Pistil.)

Ligustrum.

Circæa.

Veronica.

Pinguicula.

Utricularia.

Lycopus.

Salvia.

Orchis.

Satyrion.

Ophrys.

Malaxis.

Serapias.
Cypripedium.
Iemna.
Cladium.
Salix.
Fraxinus.

DIGYNIA (Two Pistils.)

Anthoxanthum.

MONOGYNIA.

LIGUSTRUM. (PRIVET. E.) *Tourn.* 867. *Gærtn.* 92.

CALYX. *Cup* one leaf, tubular, very small, with four upright blunt teeth.

BLOSS. One petal, funnel-shaped. *Tube* cylindrical, longer than the cup: *Border* expanded, divided into four egg-shaped segments.

STAMENS. *Filaments* two, simple, opposite. *Anthers* upright, nearly as long as the blossom.

PISTIL. *Germen* nearly round. *Style* very short. *Summit* thick, blunt, cloven.

S. VESS. *Berry* globular, smooth, of one cell.

SEEDS four, convex on one side, angular on the other.

OF. *Berry* two-celled, lined with a thin membrane. *Seeds* two in each cell. *Gærtn.*

CIRCÆA. (ENCHANTER'S NIGHTSHADE. E.) *Tourn.* 155. *Gærtn.* 24.

CALYX. *Cup* one leaf, superior, deciduous. *Tube* thread-shaped, very short. *Border* with two divisions, segments sharp, egg-shaped, concave, bent outwards.

BLOSS. *Petals* two, inversely heart-shaped, expanding, equal, mostly shorter than the cup.

STAM. *Filaments* two, hair-like, upright, as long as the cup. *Anthers* roundish.

PIST. *Germen* turban-shaped, beneath. *Style* thread-shaped, as long as the anther. *Summit* blunt, notched at the end.

S. VESS. *Capsule* betwixt egg and turban-shaped, covered with strong hairs, with two cells and two valves, opening from the base upwards.

SEEDS solitary, oblong, narrow towards the base.

Obs. *Calyx* properly two-leaved.

VERONICA. (SPEEDWELL. E.) *Tourn.* 60. *Gærtn.* 54.

CAL. *Cup* with four divisions, (rarely five. E.) permanent. *Segments* spear-shaped, acute.

Bloss. wheel-shaped, of one petal. *Tube* nearly as long as the cup. *Border* flat, divided into four egg-shaped segments. *Lower Segment* narrowest, that opposite to it the broadest.

STAM. *Filaments* two, thinnest at the bottom, ascending. *Anthers* oblong.

PIST. *Germen* compressed. *Style* thread-shaped, declining, as long as the stamens. *Summit* undivided, (notched. E.)

S. VESS. *Capsule* inversely heart-shaped, compressed at the point, with two cells and four valves.

SEEDS several, roundish.

OBS. The tube of the blossom is generally very short; less so in the first three species. Linn. In *V. montana*, the seed-vessel is roundish, with a notch at the base, and at the top, (Reich.) and in *V. hederifolia*, it is like two united globes.

PINGUICULA. (BUTTERWORT. E.) Tourn. 74. Gærtn. 112.

CAL. *Cup* gaping, small, acute, permanent. *Upper Lip* upright, with three clefts. *Lower Lip* reflexed, cloven.

Bloss. One petal, gaping. *Longer Lip* straight, blunt, with three clefts, falling back. *Shorter Lip* cloven, somewhat blunt and expanding. *Nectary* horn-shaped, being a production of the lower and hinder part of the petal.

STAM. *Filaments* two, cylindrical, crooked, ascending, shorter than the cup. *Anthers* roundish.

PIST. *Germen* globular. *Style* very short. *Summit* with two lips; *Upper Lip* largest, flat, reflexed, covering the anthers; *Lower Lip* shorter, very narrow, upright, cloven.

S. VESS. *Capsule* egg-shaped, of one cell, compressed, and opening at the point.

SEEDS many, cylindrical. *Receptacle* loose.

UTRICULARIA. (BLADDERWORT. E.) Fl. Dan. 128 and 138. Sm. E.)

CAL. *Cup* two leaves, leaflets equal, very small, egg-shaped, concave, deciduous.

Bloss. One petal, gaping. *Upper Lip* flat, blunt, upright. *Lower Lip* larger, flat, entire. A heart-shaped *Palate* prominent betwixt the lips. *Nectary* a little horn, projecting from the base of the petal.

STAM. *Filaments* two, very short; bent inwards. *Anthers* small, and adhering together.

PIST. *Germen* globular. *Style* thread-shaped, as long as the cup. *Summit* conical (two-lipped. E.)

S. VESS. *Capsule* large, globular, of one cell.

SEEDS several (on a large, globular, central *Receptacle*. E.)

OBS. The plants of this genus are very remarkable; (floating by means of numerous small membranous bladders. E.)

LYCOPUS. (GIPSY-WORT. E.) *Tourn.* 89.

CAL. *Cup* one tubular leaf, with five shallow clefts. *Segments* narrow and acute.

BLOSS. One petal, irregular. *Tube* cylindrical, as long as the cup. *Border* with four clefts, blunt, open. *Segments* nearly equal, but the *lowermost* somewhat smaller; the *uppermost* broader, and notched at the end.

STAM. *Filaments* two, generally longer than the blossom, and bending under its upper segment. *Anthers* small.

PIST. *Germen* with four clefts. *Style* thread-shaped, straight, as long as the stamens. *Summit* cloven, reflexed.

S. VESS. none.

SEEDS four, roundish, blunt, at the bottom of the cup.

SALVIA. (SAGE. CLARY. E.) *Tourn.* 83. 82. *Gærtn.* 66.

CAL. *Cup* one leaf, tubular, scored, enlarging gradually upwards, and compressed at the top. *Rim* upright with two lips. *Lower Lip* with two teeth.

BLOSS. One petal, irregular. *Tube* compressed, enlarging gradually upwards. *Border* gaping. *Upper Lip* concave, compressed, bowed inwards, notched at the end. *Lower Lip* broad, with three clefts. The *Middle Segment* largest, roundish, notched at the end.

STAM. *Filaments* two, very short, supporting two others crosswise by the middle, which have *Glands* at the lower, and *Anthers* at the upper end.

PIST. *Germen* with four clefts. *Style* thread-shaped, very long, adjoining the stamens. *Summit* cloven.

S. VESS none, the *Cup* closing a little, contains the seeds in its bottom.

SEEDS four, roundish.

Obs. The singular forked filaments constitute the Essential Character of this genus. Linn. The rudiments of two stamens appear in the mouth of the blossom, but they have no anthers. The glands in most species are callous, but in a few they appear like anthers, and sometimes contain a small quantity of pollen.

ORCHIS. (ORCHIS. E.) *Vuill.* tab. 31. *Tourn.* 247.

CAL. *Sheaths* scattered. *Fruit-stalk* undivided.

Cup none.

BLOSS. *Petals* five; *outer ones* three, *inner ones* two, approaching upwards, so as to form a helmet.

Nectary one leaf, fixed by the lower side to the receptacle between the division of the petals. *Upper Lip* upright, very short. *Lower Lip* large, expanding, broad. *Tube* standing behind, shaped like a horn, hanging a little down.

STAM. *Filaments* two, very slender and very short, standing on the pistil. *Anthers* inversely egg-shaped, upright, covered by a fold of the upper lip of the nectary, forming two cells.

PIST. *Germen* beneath, oblong, twisted. *Style* fixed to the upper lip of the nectary, very short. *Summit* compressed, blunt.

S. VESS. *Capsule* oblong, with one cell, three keels, three valves, opening in three places under the keels, continuing connected at the base and at the end.

SEEDS numerous, very small, like saw-dust.

SATYRIUM. (SATYRIUM. LIZARD-FLOWER. E.) *Vaill.*
30. f. 6.

CAL. *Sheaths* scattered. *Fruit-stalk* undivided. *Cup* none.

BLOSS. *Petals* five, oblong egg-shaped, three outward, the two ~~inner~~ approaching above, in form of a helmet.

Nectary of one leaf, fixed by the lower side to the receptacle, between the division of the petals. *Upper Lip* very short, upright. *Lower Lip* flat, pendent, with a bag like a double purse projecting behind.

STAM. *Filaments* two, very slender, very short, standing on the pistil. *Anthers* inversely egg-shaped, covered by a fold of the upper lip of the nectary, forming two cells.

PIST. *Germen* beneath, oblong, twisted. *Style* very short, fixed to the upper lip of the nectary. *Summit* compressed, blunt.

S. VESS. *Capsule* oblong, with one cell, three keels, three valves, opening in three places under the keels, connected at the base and at the end.

SEEDS numerous, very small, like saw-dust.

O'PHRYS. (OPHRYS. TWAYBLADE. E.) *Tourn.* 250.

CAL. *Sheaths* scattered. *Fruit-stalks* undivided. *Cup* none.

BLOSS. *Petals* five, oblong, approaching upwards, equal, two of them placed outwards.

Nectary longer than the petals, hanging down, behind only slightly keeled.

STAM. *Filaments* two, very short, standing on the pistil.

Anthers upright, covered by the inner edge of the nectary.

PIST. *Germen* beneath, oblong, twisted. *Style* fixed to the inner edge of the nectary. *Summit* indistinct.

S. VESS. *Capsule* somewhat egg-shaped, three-edged, blunt, scored, with three valves, and one cell, opening at the keeled angles.

SEEDS numerous, like saw-dust. *Receptacle* strap-shaped, growing to each valve of the seed-vessel.

Obs. *O. Corallorhiza* has four Stamens, viz. two in each cell. (R.)

MALAXIS. (MARSH TWAYBLADE. E.) *Swartz. E. Bot.*
72.

CAL. *Sheath* none. *Cup* none.

BLOSS. *Petals* five, three outer, two above, and one below, spear-shaped, blunt, expanding; two ~~inner~~ strap-shaped, acute, bent round the germen.

- Nectary* in the centre of the blossom, smaller than the petals, concave with convex edges, tapering to a point behind, cloven in front.
- STAM.** *Anthers* two, egg-shaped, with scarcely any filament, fixed to the edge of the hollow of the pistil, with two little cavities at the bottom.
- Pist.* *Germen* on a little fruit-stalk, roundish beneath. *Style*, a little cup-like hollow in the centre of the nectary, very short, expanding, extending half way round, with the stamens fixed to its hinder edge.
- Summit* in front of the hollow, near the stamens.
- S. VESS.** *Capsule* oblong, three-keeled, of one cell, opening under the keels, but continuing united at each end.
- SEEDS** extremely minute.

Obs. Sir J. E. Smith considers the blossom in this genus as reversed, the odd petal of the three outer ones being lowermost, and therefore erroneously called the lip; and that the most striking character is the two upright petals at the top, instead of the single one as in all our other Orchidæ. The nectary, moreover, points upwards, embracing the stamens and style. See E. Bot. p. 72.

SERA'PIAS. (HELLEBORINE. E.) *Gærtn. 11. Tourn. 249.*
Helleborine.

- CAL.** *Sheaths* scattered. *Fruit-stalk* undivided. *Cup* none.
- BLOSS.** *Petals* five, oblong egg-shaped, open, but rather upright, approaching upwards.
- Nectary* as long as the petals, hollowed at the base, filled with honey, egg-shaped, swollen beneath, cloven into three, segments at the middlemost heart-shaped, blunt, cloven at the seam of the base, with three teeth.
- STAM.** *Filaments* two, very short, fixed to the pistil. *Anthers* upright, under the upper lip of the nectary.
- PIST.** *Germen* beneath, oblong, twisted. *Style* growing to the upper lip of the nectary. *Summit* indistinct.
- S. VESS.** *Capsule* inversely egg-shaped, with three blunt edges, three keels growing to them, and three valves opening under the keels, one-celled.
- SEEDS** numerous, like saw-dust. *Receptacle* strap-shaped, growing to each valve of the seed-vessel.

CYPRIPED'IDIUM. (LADIES' SLIPPER. E.) *Tourn. 249.*
Calceolus.

- CAL.** *Sheaths* scattered. *Fruit-stalk* undivided. *Cup* none.
- BLOSS.** *Petals* four or five, spear-shaped, very long, expanding, upright.
- Nectary* within the lower petal, shaped like a slipper, inflated; blunt, hollow, shorter and broader than the petals; the *Upper Lip* small, egg-shaped, flat, bent inwards.
- STAM.** *Filaments* two, very short, standing on the pistil. *Anthers* upright, covered by the upper lip of the nectary.

PIST. *Germen* beneath, long, twisted. *Style* very short, growing to the upper lip of the nectary. *Summit* indistinct.

S. VESS. *Capsule* inversely egg-shaped, with three blunt edges, and three seams, under which it opens at the angles. *Valves* three. *Cell* one.

SEEDS numerous, very small. *Receptacle* strap-shaped, growing lengthwise to each valve of the seed-vessel.

LEM'NA. (DUCK-MEAT. DUCK-WEED. E.) *Mich.* 11. 3.

Male flower.

CAL. One leaf, circular, opening at the side, obliquely dilated outwardly, blunt, expanding, depressed, large, entire.

BLOSS. none.

STAM. *Filaments* two, awl-shaped, crooked, as long as the calyx. *Anthers* double, globular, short, permanent.

PIST. *Germen* egg-shaped. *Style* short. *Summit* indistinct.

S. VESS. barren.

Female flower on the same plant.

CAL. as above.

BLOSS. none.

PIST. *Germen* somewhat egg-shaped. *Style* short, permanent. *Summit* simple.

S. VESS. *Capsule* globular, tapering to a point; with one cell.

SEEDS several, oblong, acute at each end, nearly as long as the capsule, scored on one side.

OBS. Perfect hermaphrodite flowers have sometimes been observed. Schreb. (Root of one or more pendulous, simple fibres, each tipped with a cylindrical cap. Flowers rare, from a marginal cleft; buds (*germæ*) most frequently supply their place. Sm. E.)

CLADIUM. TWIG-RUSH. *Br. Rr.* 236. *Hook. Scot.* 3. *Schærnus.* *Linn.*

SPIKES imbricated in every direction, with sheathing, concave chaffy glumes, mostly empty, one or two of the uppermost only being perfect and single-flowered.

BLOSS. none.

STAM. linear, longer than their glume, (in some foreign species said to be more than two). *Anthers* linear, erect.

PIST. *Germen* superior, ovate, without any bristles or scales at the base. *Style* capillary, the length of the stamens, deciduous, but without a joint at the bottom. *Summits* two, three, or four, slender, acute, downy.

S. VESS. *Drypa* ovate, polished, brittle, of one cell. *Nut* bony, ovate, acute.

OBS. A genus of hard, harsh, rushy, often prickly-edged plants, whose stems, whether round or triangular, are more or less clothed with alternate sheathing leaves, or scales. *Spikes* numerous, brown, or blackish, aggregated, generally paniced. Sm. Eng. Fl. 177.

SA'LIX. (WILLOW. E.) *Tourn.* 364.*Male flowers.*

CAL. *Catkin* oblong, tiled on every side. *Involucrum* forming a bud, which is composed of

Scales, inclosing a single flower, oblong, flat, expanding.

BLOSS. *Petals* none.

Nectary a cylindrical gland, very small, lopped, containing honey, placed in the centre of the flower.

STAM. *Filaments* two, straight, thread-shaped, longer than the cup. *Anthers* double, with four cells.

Female flower.

CAL. *Catkin* as above.

Scales as above.

BLOSS. none.

PIST. *Germen* egg-shaped, tapering into a *Style* hardly distinct from the *germen*, rather longer than the scales of the calyx. *Summits* two, cloven, upright.

S. VESS. *Capsule* egg-awl-shaped, with one cell, and two valves. *Valves* rolling back.

SEEDS numerous, egg-shaped, very small, crowned with undivided hair-like down.

Obs. Stamens in some species three or five, unequal in length. In *S. hermaphrodita* the stamens and pistils are within the same calyx. Linn. In some species the filaments, in others the anthers, are united. Schreb. *S. monandra* has only one stamen.

FRAXINUS. (ASH-TREE. E.) *Tourn.* 343. *Gærtn.* 40.*Hermaphrodite flowers.*

CAL. none, or a *Cup* of one leaf, with four divisions, upright, small acute.

BLOSS. none; or *Petals* four, strap-shaped, long, acute, upright.

STAM. *Filaments* two, upright, much shorter than the blossom. *Anthers* large, upright, oblong, with four furrows.

PIST. *Germen* egg-shaped, compressed. *Style* cylindrical, upright. *Summit* rather thick, cloven.

S. VESS. spear-shaped, compressed, membranous, with one cell.

SEED. Spear-shaped, compressed, membranous, of one cell.

Female flowers.

EMPAL. BLOSS. PIST. S. VESS. and SEEDS as above.

Obs. In *F. excelsior*, the hermaphrodite flowers are frequently interspersed with female ones, and the reverse. This has neither blossom nor calyx. Linn. *Capsule* egg-oblong, leaf-like upwards, two-celled, but one cell barren. Gærtn. (Seeds pendulous. S.)

DIGYNIA.

ANTHOXANTHUM. (VERNAL-GRASS. E.) Pl. II. fig. 1.

CAL. *Husk*, two valves containing one flower. *Valves* concave, egg-shaped, taper, the innermost the largest.

BLOSS. *Husk*, two valves, the length of the larger valve of the calyx. Each valve sends out an awn from its back, at the lower part, and one of the awns is jointed. *Nectary* two leaves, very slender, cylindrical. The leaves nearly egg-shaped, and one enfolding the other.

STAM. *Filaments* two, hair-like, very long, (protruding. E.) *Anthers*, oblong, forked at each end.

PIST. *Germs* oblong. *Styles* two, thread-shaped. *Summits* undivided.

S. VESS. The *Husks* of the blossom grow to the seed.

SEED single, nearly cylindrical, tapering at each end.

Obs. It was very justly remarked to me by Miss Giddy, that the valves of the blossom are shorter than the calyx, and so they are very properly represented in Fl. Dan. 666; and less distinctly so in the figure referred to above.

CLASS, III.

TRIANDRIA.

THIS Class comprehends, besides other plants, the greater part of the GRASSES, and some vegetables nearly allied to them. Although the flowers in these are generally disregarded, they will not, to an attentive observer, appear less curiously constructed, than those which boast of gay colours and more conspicuous parts.

The solicitude of Nature for the preservation of Grasses is evident from this circumstance; that the more the leaves are consumed, the more the roots increase. The great Author of Nature designed, that the delightful verdure of these plants should cover the surface of the earth, and that they should afford nourishment to an almost infinite number of animals. But what excites our admiration most, is, that although the Grasses constitute the principal food of herbivorous animals, yet, whilst they are left at liberty in the pasture, they leave untouched the straws* which support the flowers, that the seeds† may ripen and sow themselves. Add to this, that many of the seemingly dry and dead leaves of Grasses revive, and renew their verdure, in the

* (Paley ingeniously conjectures that the joints in Grasses (not to be found in the trunks of trees, nor in the solid stalks of other plants,) are intended to corroborate their long and hollow stems. E.)

† (In the GRAMINA the term *Seed* has been generally adopted for *Fruit*; which, as Dr. Hooker states, is of that kind called *Gynopsis*, the seed being so intimately united with the pericarp as to appear identified with it.)

spring. And on lofty mountains, where the summer heats are scarcely sufficient to ripen the seeds, the most common Grasses are, *Festuca ovina*, *Poa alpina*, and *Aira cæspitosa*, all which are viviparous, and consequently propagate themselves without seeds.

In general, the leaves furnish pasturage for cattle; the smaller seeds are food for birds, and the larger for man. But some are preferred to others; as, the *Festuca* for Sheep; the *Poa* for Cows; the *Phalaris* for Canary-birds and Linnets; the *Avena* for Horses; the *Secale*, *Hordeum*, and *Triticum* for Man.*

Variety of Insects also derive their nourishment from Grasses; as *Papilio mæra*, *P. Egeria*, *P. Galathea*, *P. Jurtina*, *P. Cinxia*, *Phalaena Quercifolia*, *Ph. polatoria*, *Ph. culmella*, *Chrysomela Graminis*, and several others, which will be mentioned under the different species.

(It has been suggested that various plants in themselves acrimonious, and even noxious, when combined with the more mild and nutritious herbage, serve but as wholesome and agreeable stimulants, or seasoning, as Sir J. E. Smith terms it, to the pasture food of cattle.

In the epidermis of Grasses (as also of some other plants), Sir H. Davy has detected a minute portion of siliceous matter. E.)†

No part of Botany appeared to me, at first, more difficult than the study of Grasses; but the method of accurate dissection and observation once adopted, none became more easy. However, when the great importance of the subject is considered, we cannot labour too much to fix the public attention to it, by rendering it as facile as possible: for which reason the exceptions are carefully noted under each subdivision of the orders, and in the following plate an example is selected from each Linnæan genus, taken from the *Amœnitates Academicæ*. To gain a clear idea of the structure of the flowers, they must be examined just before the Anthers discharge the Pollen; and by comparing them in that state with the figures in the plate, and with the generic description, the principal difficulties will soon be surmounted. The Botanic Microscope will be found extremely useful in dissecting the minuter parts.

(It will be perceived that we have availed ourselves of the latest improvements in the Generic Characters and distribution of this interesting natural order, as deduced from the *Prodromus* of the Flora of New Holland by Mr. Brown, and the English Flora of the learned President.

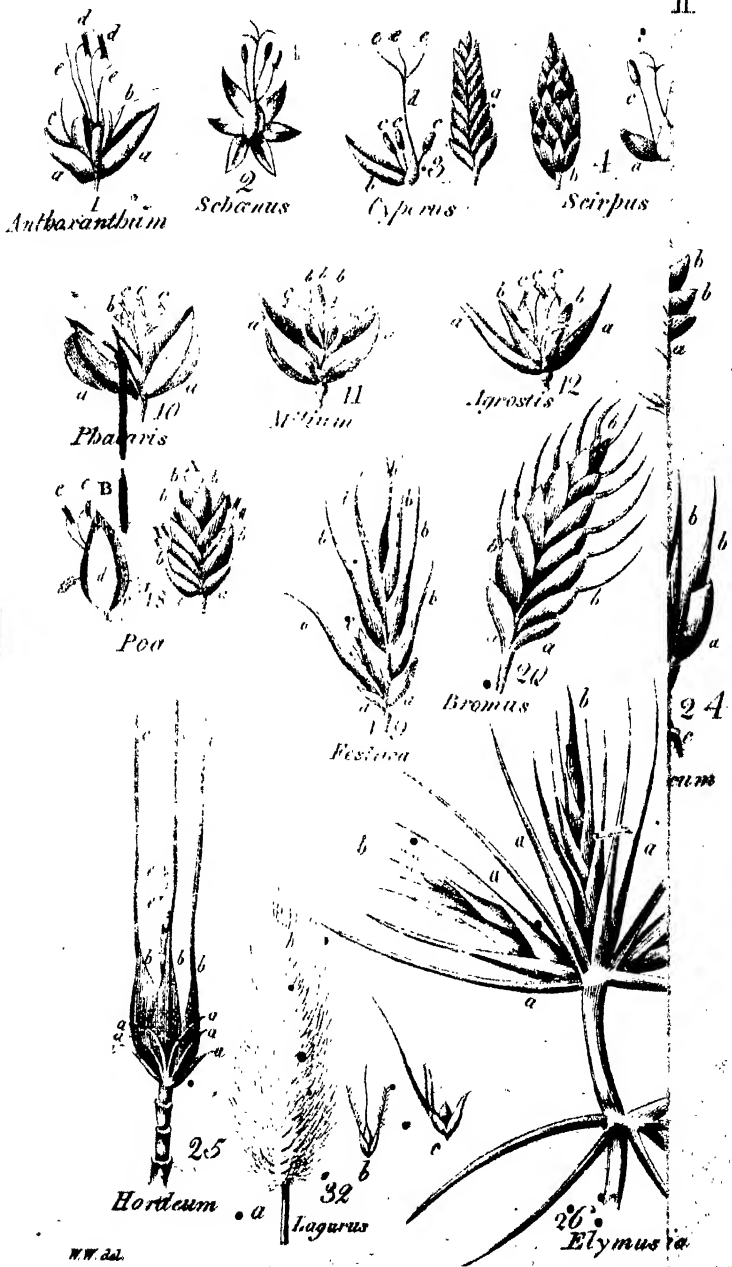
As a model of accurate experiment and elaborate research, immediately connected with this department of Botany, we cannot refrain from here alluding to the *Hortus Gramineus Woburnensis* of Mr. Sinclair; a work equally meriting the attention of the scientific Botanist and the practical Agriculturist, and to which we shall with pleasure refer in the sequel of our Arrangement. E.)

* (For examples of the astonishing produce of some Grasses, see *Agrostis stolonifera*. With. vol. ii. and Phil. Trans. 1768. E.)

† (The same phenomenon may be observed in the joints of certain Reeds, and was remarkably exemplified in the articulations of a Cane discovered by the Editor in a block of Italian marble, the conglomerated siliceous particles being clearly distinguishable. E.)

EXPLANATION OF PLATE II.

- FIG. 1. ANTHOXANTHUM.** *a a* husks of the calyx. *b* the awn of the inner valve of the blossom, twisted and jointed. *c* the straight awn of the outer valve of the blossom. *d d* the two anthers. *e e* the two styles.
- FIG. 2. SCHÆRUS.** The six petals, the three stamens, and anthers; the germens, the style, and the summit cloven into three parts.
- FIG. 3. CYPERUS.** *a* the tiled spike pointing from two opposite lines. *b* the scales of the calyx. *c c c* the anthers. *d* the style. *e e e* the summits.
- FIG. 4. SCIRPUS.** *b* the tiled spike. *a* the scale of the calyx. *c c c* the stamens and anthers. *d* the germen, a little woolly.
- FIG. 5. ERIOPHORUM.** *a* the woolly tiled spike. *l* the scale of the calyx including the hairy germen, the stamens, and the pistil.
- FIG. 6. NARBUS.** *A* the spike pointing one way. *c c c* the blossoms. *B* one of the florets a little magnified. *a* the lower and larger valve which embraces the smaller valve *b*, which is here drawn out of its natural situation. *c c c* the anthers.
- FIG. 7. PANICUM.** *b b* the two equal valves of the calyx. *a* the third smaller and outer valve. *c c* the valves of the blossoms. *d d d* the anthers. *e e* the downy summits of the styles.
- FIG. 8. ALOPECURUS.** *a a* the valves of the calyx. *b* the single valve of the blossom, with the awn *c* proceeding from its base. *d d d* the anthers.
- FIG. 9. PHLEUM.** *a a* the husks of the calyx, opened and magnified to show the blossom. *b* the floret in its natural state to show the two points at the top of it. *c c c* the anthers.
- FIG. 10. PHALARIS.** *a a* the keeled husks of the calyx. *b b* the husks of the blossom. *c c* the anthers.
- FIG. 11. MILIUM.** *a a* the husks of the calyx. *b b b* the anthers. *c c* pencil-shaped summits.
- FIG. 12. AGROSTIS.** *a a* the two-pointed valves of the calyx. *b b* the two valves of the blossom. *c c c* the anthers.
- FIG. 13. DACTYLIS.** *a* the outer and larger valve of the calyx. *b* the shorter valve. *c* the keel-shaped valve of the blossom. *e e e* the anthers. *d* the panicle pointing one way.
- FIG. 14. STIPA.** *a a* the valves of the calyx. *b* the outer valve of the blossom, with the awn jointed at the base and twisted. *c* the inner valve of the blossom. *d d* the downy awn. *e e* the hairy shafts and summits. *f f f* the anthers.
- FIG. 15. AITHA.** *a a* the calyx. *b b* the blossoms, without the rudiment of a third betwixt them.
- FIG. 16. MELICA.** *a a* the calyx. *b b* the fertile blossoms with *e* the rudiment of a third blossom betwixt them.
- FIG. 17. BRIZA.** *a a* the valves of the calyx. *b b b b* the blossoms, of which the outer valves only are visible. *B* one of the blossoms taken out of the little spike. *c c* the outer heart-shaped valve of the blossom. *d d* the inner valve inversely egg-shaped.



TRIANDRIA (Three Stamens.)

MONOGYNIA (One Pistil.)

<i>Valeriana.</i>	<i>Scirpus.</i>
<i>Fedia.</i>	<i>Eleocharis.</i>
<i>Bryonia.</i>	<i>Cyperus.</i>
<i>Ruscus.</i>	<i>Schœnus.</i>
<i>Crocus.</i>	<i>Rhynchospora.</i>
<i>Iris.</i>	<i>Carex.</i>
<i>Nardus.</i>	<i>Typha.</i>
<i>Eriophorum.</i>	<i>Sparganium.</i>

DIGYNIA (Two Pistils.)

<i>Phalaris.</i>	<i>Briza.</i>
<i>Panicum.</i>	<i>Dactylis.</i>
<i>Phleum.</i>	<i>Spartina.</i>
<i>Alopecurus.</i>	<i>Cynosurus.</i>
<i>Knappia.</i>	<i>Festuca.</i>
<i>Polypogon.</i>	<i>Bromus.</i>
<i>Milium.</i>	<i>Stipa.</i>
<i>Agrostis.</i>	<i>Avena.</i>
<i>Cynodon.</i>	<i>Lagurus.</i>
<i>Holcus.</i>	<i>Arundo.</i>
<i>Hierochloe.</i>	<i>Lolium.</i>
<i>Aira.</i>	<i>Rottbollia.</i>
<i>Melica.</i>	<i>Elymus.</i>
<i>Sesleria.</i>	<i>Hordeum.</i>
<i>Poa.</i>	<i>Triticum.</i>
<i>Triodia.</i>	

TRIGYNIA (Three Pistils.)

<i>Amaranthus.</i>	<i>Holosteum.</i>
<i>Montia.</i>	<i>Polycarpon.</i>
<i>Tillœa.</i>	

ENNEAGYNIA (Nine Pistils.)

Empetrum.

TRIANDRIA. MONOGYNIA.

VALERIA'NA. (VALERIAN. E.) *Tourn.* 52. *Gærtn.* 86.

CAL. hardly any, but a border on the germen.

BLOSS. Tube protuberant on the under side, containing honey. Border with five clefts. *Segments* blunt.STAM. three, or fewer than three, awl-shaped, upright, as long as the blossom. *Anthers* roundish.PIST. *Germen* beneath. *Style* thread-shaped, as long as the stamens. *Summit* thickish.

S. VESS. crust, not opening, deciduous, crowned.

SEEDS solitary, oblong, (crowned with many spreading, feathery rays, gradually unrolled. Sm. E.)

OBS. (The seed is truly naked, having only a membranous film besides its outer skin, or *testa*. Sm. E.) There is a wonderful diversity in the parts of the flowers in different species of Valerian, as well in number as in figure. Linn. Thus, in *V. rubra* the flowers have only one stamen; in *V. didica* the stamens and pistils are on different plants.(FE'DIA. CORN-SALAD. *Gærtn.* 86. *Hook. Scot.* 12. Valerianæ species. Linn. •CAL. of three or four variously shaped teeth, subsequently enlarged, and crowning the *capsules*.BLOSS. of one tubular petal, with a short blunt spur at one side; limb in five obtuse, rather unequal, *segments*.STAM. *Filaments* sometimes more, borne by the tube, rather shorter than the limb. *Anthers* roundish.PIST. *Germen* inferior, of three cells, roundish. *Style* thread-shaped. *Summit* notched.S. VESS. *Capsule* coriaceous, or membranous, various in shape, not bursting, crowned with the permanent *calyx*, usually of two abortive cells, and one fertile.

SEEDS solitary, ovate, smooth, with a simple skin.

OBS. Annual herbs, about a span high, with a fibrous root, forked leafy stem, and opposite, mostly simple and smooth, leaves. Flower small, bluish, purplish; red or yellow. Fruit very various. Sm. Eng. Fl. E.)

BRYO'NIA. (BRYONIA E.) *Tourn.* 28. *Gærtn.* 88.*Male flowers.*

CAL. Cup one leaf, bell-shaped, with five awl-shaped teeth.

BLOSS. with five divisions, bell-shaped, fixed to the cup. *Segments* egg-shaped.STAM. *Filaments* three, very short. *Anthers* five, only one on the third filament, but two on each of the others growing together.*Female flowers on the same plant. •*

CAL. Cup as above, superior, deciduous.

BLOSS. as above.

PIST. *Germen* beneath. *Style* with three clefts, as long as the blossom when open. *Summits* notched at the end, spreading.

S. VESS. *Berry* roundish, smooth.

SEEDS few, enclosed in distinct cells.

Obs. In *B. dioica* the stameniferous and pistilliferous, or male and female flowers, are found on different plants.

RUSCUS. (BUTCHER'S BROOM. E.) *Tourn.* 15. *Gärtn.* 16.

Male flowers.

CAL. *Cup* with six leaves, upright, but expanding. *Leaflets* egg-shaped, convex, the edges at the sides reflexed.

BLOSS. none, unless every other leaf of the cup be considered such.

Nectary egg-shaped, central, as large as the cup, inflated, open at the rim, upright, coloured.

STAM. *Filaments* none. *Anthers* three, expanding, placed upon the end of the nectary, united at the base.

Female flowers.

CAL. *Bloss.* and *Nectary*, as above.

PIST. *Germen* oblong egg-shaped, concealed within the nectary. *Style* cylindrical, as long as the nectary. *Summit* blunt, projecting through the mouth of the nectary.

S. VESS. *Berry* globular, with three cells.

SEEDS two, globular.

Obs. In this and other genera nearly related to it, all the seeds seldom come to perfection; for the most part one seed enlarging, by pressure destroys the others.

CROCUS. (CROCUS. SAFFRON. E.) *Tourn.* 184. (Sm. E.)

CAL. *Sheath* (radical, of two unequal membranous, tubular sheaths, single-flowered. E.)

BLOSS. *Tube* simple, long. *Border* with six divisions, upright. *Segments* equal, oblong, egg-shaped.

STAM. *Filaments* three, awl-shaped, shorter than the blossom. *Anthers* arrow-shaped.

PIST. *Germen* beneath, roundish. *Style* thread-shaped, as long as the stamens. *Summits* three, rolled spirally, serrated.

S. VESS. *Capsule* roundish, with three lobes, three cells, and three valves.

SEEDS several, round.

IRIS. (IRIS. FLOWER-DE-LUCE. E.) *Tourn.* 186, 188. *Gärtn.* 13.

CAL. *Sheath* two valves, separating the flowers, permanent.

BLOSS. with six divisions. *Segments* oblong, blunt. The three outer ones reflexed, the other three upright, more acute, all connected together by the claws, so as to form a tube.

STAM. *Filaments* three, awl-shaped, lying upon the reflexed segments.
Anthers oblong, straight, depressed.

PIST. *Germen* beneath, oblong. *Style* simple, very short. *Summits* three, very large, resembling petals; keeled within, furrowed on the outside, leaning on the stamens, two lipped, outer lip small, notched at the end, inner lip larger, cloven, a little bent inwards, (with a cleft between them which receives the pollen, thus performing the office of the stigma. E.)

S. VESS. *Capsule* oblong, angular, with three cells and three valves.

SEEDS several, large.

OBS. In some species the nectary is a long line marked on the base of the reflexed petals, and set with hair-like substances, in others there are three nectariferous dots at the base of the flower on the outside. In some the capsule has three, in others six angles. Linn.

NAR'DUS. (MAT-GRASS. E.) Pl. 2. f. 6. Schreb. 7. F. G.
H.D.C.H. (Sm., E.)

CAL. none.

BLOSS. two valves. *Outer Valve* long, spear-strap-shaped, sharp pointed, enclosing the *Lesser Valve*, which is strap-shaped, and sharp-pointed.

STAM. *Filaments* three, hair-like, shorter than the blossom. *Anthers* oblong.

PIST. *Germen* oblong. *Style* single, thread-shaped, (short. E.) downy. *Summit* undivided, (long, feathery. E.)

S. VESS. none; the blossom adheres to the seed, without opening.

SEEDS single, enclosed in the blossom, long and narrow, tapering to a point at each end, the upper part narrowest.

(**OBS.** All the florets assuming one direction. E.)

ERIOPHORUM. (COTTON-GRASS. E.) Pl. II. f. 5. Gærtn. 2.

CAL. *Spike* tiled on every side. *Scales* separating the florets, egg-oblong, flat, but bent inwards, membranous, limber, tapering to a point.

BLOSS. none.

STAM. *Filaments* three, hair-like. *Anthers* upright, oblong.

PIST. *Germen* very small. *Style* thread-shaped, as long as the scale of the calyx, (entirely deciduous. E.) *Summits* three, longer than the style, reflexed.

S. VESS. none.

SEEDS three-cornered, tapering to a point, furnished with soft hairs, which are longer than the spike.

OBS. The presence of the stamens and pistils is different: in some species they are as described above, in the same floret; in others in different florets on the same or on different plants. Schreb.

SCIR'PUS. (CLUB-RUSH. BUEL-RUSH. E.) Pl. II. f. 4.
Town. 300. Gærtn. 2.

CAL. *Spike* tiled on every side, the florets separated by *Scales*, which are egg-shaped, flat, but bent inwards.

BLOSS. none.

STAM. *Filaments* three, which continue growing longer, (flat. E.) *Anthers* oblong.

PIST. *Germen* very small. *Style* thread-shaped, long. *Summits* three, hair-like, (downy. E.)

S. VESS. none.

SEED single, three-cornered, taper pointed, sometimes furnished with soft hairs, which are shorter than the calyx.

OBS. Soft hairs in some species grow to the point, in others to the base, of the seed. Linn. *S. palustris* has only two summits. Leers. In this genus all the scales contain fertile florets, whilst in *Schœnus*, the lower scales are always barren.

(ELEO'CHARIS. SPIKE-RUSH. *Br. Pr.* 224. *Scirpus*. Linn.

CAL. *Spike* of numerous *flowers*, all perfect. *Gl.* imbricated in every direction, expanded, uniform.

BLOSS. none.

STAM. *Filaments* capillary. *Anthers* linear.

PIST. *Germen* compressed. *Style* dilated at the base, and united by a suddenly contracted joint, with the *germen*. *Summits* two or three.

SEED lenticular, or triangular, crowned with the hard, discoloured, wrinkled, triangular or compressed, permanent base of the style.

BRISTLES four to twelve, finely toothed, beneath the *germen*, rarely wanting, springing from one common membranous base with the three *stamens*.

OBS. Water plants with simple leafless stems, sheathed at the base, and a solitary, terminal, erect, leafless spike. Sm. Eng. Fl. E.)

CYPE'RUS. (GALINGALE. E.) Pl. II. fig. 3. *Tourn.* 299. *Gærtn.* 2.

CAL. *Spike* two-rowed, tiled. *Scales* egg-shaped, keeled, flat, but bent inwards, separating the florets.

BLOSS. none.

STAM. *Filaments* three, very short. *Anthers* oblong, furrowed.

PIST. *Germen* very small (poundish, without bristles beneath. E.) *Style* thread-shaped, very long. *Summits* three, hair-like.

S. VESS. none.

SEED single, three-cornered, tapering to a point, without hairs.

SCHœ'NUS. (RUSH-GRASS. ~~DOG-RUSH.~~ E.) Pl. II. f. 2.

CAL. *Husks* chaffy, of one valve, crowded together.

BLOSS. none.

STAM. *Filaments* three, hair-like. *Anthers* oblong, upright.

PIST. *Germen* egg-shaped, somewhat three-cornered, blunt. *Style*

bristle-shaped, as long as the husks. *Summit* slender, with two or three clefts, (feathery. E.)

S. VESS. none.

SEED single, roundish, within the husks.

OBS. In some species, the seeds are surrounded by small bristles growing to the proper receptacle. Linn. Outer husks hard, stiff, short, empty. Upper or inner husks soft, longer, fertile. St. Lower husks barren, upper ones fertile; but in the genus *Scirpus*, they are all fertile, and this seems the best distinction between the two genera. Scop.

(RHYNCHOSPORA. BEAK-RUSH. Br. Pr. 229. Schœnus. Linn.

CAL. *Spike* of two or three perfect flowers, subtended by numerous, gradually smaller, empty, crowded glumes. Gl. all imbricated in every direction, concave, pointed.

BLOSS. none.

STAM. *Filaments* one, two, or three. *Anthers* linear, erect.

PIST. *Germen* superior, roundish, small with several rough bristles, shorter than its glume, beneath. *Style* capillary, with a broad base, which remains, forming a hard, conical, compressed, pale beak to the convex, otherwise obtuse, seeds.

OBS. Stems erect, simple, leafy, triangular. Leaves keeled, with entire sheaths. Spikes in corymbose, stalked heads. Flower sometimes partly monoecious, according to Vahl. Sm. Eng. Fl. E.)

CAREX. (SEG. E.) Pl. II. fig. 29. Tourn. 300. Cype-roides. Gærtn. 2.

Male flowers forming a spike.

CAL. *Catkin* oblong, tiled, consisting of Scales, each including a single floret, spear-shaped, acute, concave, permanent.

BLOSS. none.

STAM. *Filaments* three, bristle-shaped, upright, longer than the inclosing scale. *Anthers* upright, long, strap-shaped.

Female flowers the same, but sometimes on distinct plants.

CAL. *Catkin* as above.

BLOSS. *Petals* none.

Nectary inflated, oblong egg-shaped, with two or three teeth at the end, contracted towards the upper part, mouth open, permanent.

PIST. *Germen* three-cornered, within the nectary. *Style* simple. *Summits* three or two, awl-shaped, long, tapering to a point, downy.

S. VESS. none. The nectary enlarging contains the seed.

SEED single, egg-shaped, but pointed, three-cornered, one of the angles generally smaller.

OBS. In some species, the male and female florets are in separate spikes, though on the same plant. Linn. In others, on distinct plants, and in others again in the same spike. What in the flowering state Linnaeus calls the nectary, in maturity performs the office of a seed-vessel, and is

then denominated a capsule. It has an open mouth, through which the summits issue from the top of the germen; this mouth sometimes closes, at others remains open; in some species it is entire, in others it has two pointed teeth at the end.

TY'PHA. (REED-MACE. E.) *Tourn.* 301. *Gærtn.* 2.

Male flowers numerous, forming a catkin at the end of the straw.

CAL. *Catkin common, cylindrical, very closely set, consisting of Individual Calyxes with three leaves, bristle-shaped.*

BLOSS. none.

STAM. *Filaments three, hair-like, as long as the calyx. Anthers oblong, pendent.*

Female flowers numerous, set exceedingly close, forming a catkin, which surrounds the stem.

CAL. none.

BLOSS. none.

PIST. *Germen sessile on a little bristle, egg-shaped. Style awl-shaped. Summit hair-like, permanent.*

S. VESS. none. *Fruit very numerous, and forming a cylinder.*

SEED single, egg-shaped, furnished with a style sessile on a bristle.

Down hair-like, fixed to the bristle which supports the seed from its base to the middle, as long as the pistil.

SPARGANIUM. (BUR-REED. E.) *Tourn.* 302. *Gærtn.* 19.

Male flowers numerous, collected into a little head.

CAL. *Common Catkin roundish, tiled very closely on every side, consisting of Proper Cups with three leaves, strap-shaped, deciduous.*

BLOSS. none.

STAM. *Filaments three, hair-like, as long as the cup. Anthers oblong. Female flowers.*

CAL. as above. *Common Receptacle roundish.*

BLOSS. none.

PIST. *Germen egg-shaped, terminating in a short awl-shaped Style. Summits one or two, acute, channelled, permanent.*

S. VESS. *Drupa juiceless, turban-shaped, but terminated by a point, angular beneath.*

SEED a Nut, hard as bone, oblong, egg-shaped, angular.

Obs. The seed in some with one cell, in others with two. *Tourn.* quoted by Linnæus.

DIGYNIA.

PHALARIS. (CANARY-GRASS. E.) *Pl. II. f. 10. Gærtn.* 80. (*Sm. E.*)

CAL. double, containing one flower.

Outer Husk two valves, compressed. Valves boat-shaped, compressed, keeled, acute, nearly equal; edges straight, parallel, approaching.

Inner, two valves. *Valves* spear-shaped, acute, small, pubescent, resting against the back of the blossom at the base.

Bloss. smaller than the calyx, (concealed, of three or four valves; the outermost smallest, lanceolate, acute, of one or two valves; two inner ones twice as large, unequal, cartilaginous, downy, subsequently hardened and closely investing the seed. E.)

Nectary two-leaved; leaflets spear-shaped, tapering to a point, transparent, greenish, bulging at the base.

STAM. *Filaments* three, hair-like. *Anthers* oblong, forked.

PIST. *Germen* egg-shaped. *Styles* two, hair-like, united at the base. *Summits* woolly, (or feathery. E.)

S. VESS. none. The blossom adheres to the seed like a crust, and does not open.

SEED single, egg-oblong, tapering to a point.

(PANTCUM (PANICK-GRASS. E.) Pl. II. f. 7. *Gærtn.* 1.
(*Digitaria. Hall. Hist. Juss. Sm. Syntherisma. Schrad.*
E.)

CAL. *Husk* two valves, containing two florets. *Valves* nearly egg-shaped, fibrous, the outer rather lower, very small. One floret hermaphrodite, the other either male or neutral.

Bloss. of the hermaphrodite floret, a *Husk* of two valves; valves nearly egg-shaped, gristly; *Outer* convex, its edges embracing the *Inner Valve*, which is smaller and flatter.

Neutral or *Male* floret, *Husk* of two valves, the *Outer* (placed in the bosom of the smaller valve of the calyx) flattish, fibrous; *Inner* valve membranous, flat, its edges turned inwards, generally small.

Nectary two-leaved, very small, gibbous. In the neutral floret none.

STAM. *Filaments* three, hair-like. *Anthers* oblong.

PIST. *Germen* roundish. *Styles* two, hair-like. *Summits* feathered.

S. VESS. none; the blossom adheres to the seed, and does not open.

SEED single, covered, roundish, but flattened on one side.

OBS. Overlooking the inner valve of the neutral floret, the outer seems to belong to the calyx, so that most Botanists have mentioned the calyx as having three valves, one of them very small. Valves generally four. The first or outermost: the second opposite to the outermost, and covering the outer valve of the blossom; the third opposite and similar to the second; the fourth between the third and the inner valve of the blossom, flat, membranous, and generally smaller than the first. Mr. Curtis has seen and figured it in *P. Crusgalli*, f. 5. 6., but calls it a membrane between the calyx and blossom. It exists in *P. glaucum, viride; miliaceum, capitulare, patens*, and even in *sanguinale*, where, still observing its proportions to the outer valve, it is with difficulty discovered. In *P. patens*, with the assistance of the third valve, it performs the office of a blossom, inclosing three naked stamens. *P. Dactylon* has only two. St.

PHLEUM. (CAT'S-TAIL-GRASS. TIMOTHY-GRASS. E.) Pl. II. f. 9. *Gærtn.* 1.

CAL. *Husk* two valves, including a single floret; oblong, strap-shaped, compressed; open at the end, and furnished with two dagger points. *Valves* equal, straight, concave, compressed; one embracing the other; lopped; with a sharp point at the end of the keel.

BLOSS. two valves, shorter than the calyx; *Outer Valve* embracing the *Inner Valve*, which is smaller.

Nectary two leaves; leaflets egg-shaped, concave, acute. Schreb.

STAM. *Filaments* three; hair-like: longer than the calyx. *Anthers* oblong, forked at each end.

PIST. *Germen* roundish. *Styles* two; hair-like; reflexed. *Summits* feathered.

S. VESS. none. The calyx and the blossom inclose the seed. **SEED** single, roundish.

OBS. In *P. arnarium* the florets are egg-spear-shaped and the calyx not lopped, (on which account it was by several Botanists referred to the genus *Phalaris*, but has been recently restored to the position originally assigned for it by Linnaeus. E.)

ALOPECURUS. (FOX-TAIL-GRASS. Pl. II. f. 8. Gærtn. 1.

CAL. *Husk* two valves, containing one floret. *Valves* egg-spear-shaped, compressed, equal, united at the base.

BLOSS. one valve, egg-spear-shaped, concave, rather shorter than the calyx, its edges united at the base. *Awn* twice as long as the blossom, jointed, fixed on the back of the blossom towards its base.

Nectary none.

STAM. *Filaments* three, hair-like, flattish at the bottom, longer than the calyx. *Anthers* forked at each end.

PIST. *Germen* roundish. *Styles* two, hair-like, united at the base, longer than the calyx. *Summits* woolly, (or feathery, spreading. E.)

S. VESS. none; the blossom inclosing the seed.

SEED egg-shaped, covered.

OBS. In *A. agrestis* the calyx is of one piece, divided rather more than half way down.

(KNAP'PIA. KNAPPIA. Sm. Hook. Agrostis. Linn.

CAL. two nearly equal, expanded, concave, keeled, ovate, abrupt, single-ribbed, awnless *valves*, containing a single floret.

BLOSS. two unequal, obovate, membranous, ribbed, very hairy, fringed, awnless *valves*, rather shorter than the calyx; the larger embracing the inner one.

STAM. *Filaments* capillary, twice as long as the calyx. *Anthers* elliptic, long, cloven at each end, erect, with two minute terminal beaks.

PIST. *Germen* minute, roundish. *Styles* very short. *Stigmas* rather longer than the stamens, cylindrical, downy, acute.

SEED loose, covered by the blossom, obovate, copiously dotted in longitudinal lines. E.)

(POLYPO'GON. BEARD-GRASS. *Br. Pr.* 173. *Alopecurus*.
Linn. *Agrostis*.

CAL. of two nearly equal, folded, keeled *valves*, cloven at the summit ; each with a terminal, straight, rough *awn*, proceeding from the keel, containing a single floret.

BLOSS. of two, somewhat unequal, ovate, concave valves, much shorter than the calyx, and inclosed within it ; the outer keeled, terminating in a rough awn ; the inner smallest, awnless, with two ribs, cloven at the summit.

STAM. *Filaments* capillary, about the length of the blossom. *Anthers* terminal, oblong, cloven at each end.

PIST. *Germen* oval. *Styles* short, distinct. *Summit* feathery.

SEED loose, ovate, polished, covered by the blossom. The terminal straight awn of the *blossom* is totally distinct in nature from the dorsal, jointed, twisted, inconstant awn of an *Agrostis*.

Obs. Root fibrous or creeping, annual or perennial. Stems one or more, simple or branched, jointed, leafy. Leaves roughish. Panicle erect, compound, dense, lobed, bristly from the copious awns of the numerous small crowded flowers. *Sm. Eng. Fl. E.*)

MIL'IUM. (MILLET-GRASS. E.) *Pl. II. f. 11.* *Tourn.* 298.

CAL. *Husk* two valves inclosing a single floret. *Valves* egg-shaped, tapering to a point, nearly equal.

BLOSS. two valves smaller than the calyx. *Valves* egg-shaped ; one smaller.

Nectary two egg-shaped blunt leaflets, tumid at the base. *Schreb.*

STAM. *Filaments* three, hair-like, very short. *Anthers* oblong.

PIST. *Germen* roundish. *Styles* two, hair-like. *Summits* pencil-shaped.

S. VESS. The blossom incloses the seed, which is very smooth.

SEED single, covered, roundish.

Obs. Blossom in *M. effusum*, nearly as long as the calyx.

AGROS'TIS. (BENT-GRASS. E.) *Pl. II. f. 12.* (*Sm. E.*)

CAL. *Husk* two valves, inclosing one floret, tapering to a point, somewhat smaller than the blossom.

BLOSS. two valves, tapering to a point, one *Valve* larger, tumid at the base : (in some species bearing an awn the smaller valve constantly awnless, and sometimes abortive.

Nectary two acute leaflets, or scale, occasionally united. *E.*)

STAM. *Filaments* three ; hair-like ; longer than the blossom. *Anthers* forked.

PIST. *Germen* roundish. *Styles* two ; reflected, woolly. *Summits* set lengthwise with stiff hairs.

S. VESS. The blossom adheres to the seed without opening.

SEED single ; cylindrical, but tapering towards each end.

(CY'NODON. DOG'S-TOOTH-GRASS. *Br. Pr.* 187. *Panicum*. *Linn.*

CAL. of two nearly equal, lanceolate, acute, keeled, awnless, spreading valves, containing a single floret.

BLOSS. of two unequal, keeled, compressed, awnless valves; the outermost much the broadest, clasping the other.

Nectary of two minute scales.

STAM. *Filaments* rather longer than the blossom. *Anthers* cloven at each end.

PIST. *Germen* ovate. *Styles* distinct. *Summits* feathery.

SEED ovate, coated with the hardened blossom.

OBS. Schrader and Brown have observed occasionally the rudiments of a second flower, like a small bristle.

The stems are prostrate and creeping, leafy, with upright flowering branches.

Flower spiked, unilateral, somewhat alternate, on the flat side of a linear triangular receptacle, several of which are collected at the top of the branch. The receptacle is really neither jointed nor scrobiculated, so that this genus cannot be referred to the spiked grasses which constitute our third section. (*Sin. Eng. Fl. E.*)*

HOL'CUS. (SOFT-GRASS. *E.*) Pl. II. f. 30.

Hermaphrodite florets, sessile.

CAL. *Husk* of two valves, nearly egg-shaped, blunt, leather-like, awnless, containing one floret. *Valves*, outer one large, concave, with about three teeth at the point, embracing the *inner* valve, which is oblong, the edges rolled in.

BLOSS. *Husk* two valves, delicate, woolly, smaller than the calyx.

Outer valve smaller, placed within the *inner* valve of the calyx, mostly cloven, awned. *Awn* growing out of the cleft, longer, or shorter, jointed, twisted; sometimes absent.

Nectary of three leaflets, two of them membranous, lopped; the third opposite, egg or spear-shaped, woolly.

STAM. *Filaments* three, hair-like, very delicate. *Anthers* oblong, cloven.

PIST. *Germen* egg-shaped. *Styles* two, hair-like, diverging. *Summits* oblong, downy.

S. VESS. none. The husks of the blossom and of the calyx inclose the seed.

SEED solitary, egg-shaped, covered, easily shedding, armed with the awn of the blossom.

Nectary florets smaller, on foot-stalks, solitary or in pairs, standing by each hermaphrodite floret.

CAL. *Husk* two valves. *Valves* egg-spear-shaped, rather acute, chaff-like, awnless. *Outer* valve concave, embracing the *inner*, which is narrower.

* (For the genus *Digitaria*, derived also from the Linnæan *Panicum*, see Haller, Jussieu, and Brown. *E.*)

BLOSS. *Husk* two valves, smaller, delicate. *Outer* valve within the inner valve of the calyx, shorter, with two teeth, awnless. *Inner* valve with its edges turned in.

Nectary as above.

STAM. *Filaments* three, as above.

PIST. *Germen* small, angular, barren. *Styles* two, like bristles. *Summits* none.

OBS. In *H. lanatus*, the blossom of the male flower only is awned, and in *H. mollis*, both florets are hermaphrodite, the upper one only awned.

(HIEROCHLO'E. HOLY-GRASS. *Br. Pr.* 208. *Hook. Scot.* 28. *Holcus. Linn.*

CAL. of two somewhat unequal, ovate, keeled, acute, awnless, thin, membranous *valves*, containing a *spikel* of three *florets*; the terminal one perfect; lateral ones barren.

BLOSS. of two unequal, permanently membranous, valves; the outer largest, ovate, firmer than the calyx, ribbed, often rough, sometimes awned at the back; inner much narrower, filmy, awnless, cloven or notched at the summit, inflexed at the margins.

Nectary a membranous scale, various in shape.

STAM. *Filaments* capillary, two in the perfect floret; three in each barren one. *Anthers* linear, prominent, pendulous.

PIST. *Germen* ovate, small. *Styles* short, close together, distinct. *Summits* longer than the blossom, linear, feathery.

SEED ovate, pointed, small, loose, the blossom remaining unchanged.

OBS. A northern tribe; all remarkable for a fragrant scent, in Sweden deemed narcotic. The generic distinction between *Hierochloe* and *Holcus* is confirmed by the loose seed and unhardened blossom, which characters did not escape the learned Schrader. *Sm. Eng. Fl. E.*)

A'IRA. (HAIR-GRASS. E.) *Pl. II.* fig. 15. *Gærtn.* 1.

CAL. *Husk* two valves, containing two florets. *Valves* egg-spear-shaped, equal, acute.

BLOSS. two valves, resembling those of the calyx. No rudiment of a flower betwixt the florets.

Nectary two leaflets, acute, gibbous at the base. *Schreb.*

STAM. *Filaments* three, hair-like, as long as the blossom. *Anthers* oblong, forked at each end.

PIST. *Germen* egg-shaped. *Styles* two, like bristles, expanding. *Summits* pubescent.

S. VESS. none. The blossom incloses and adheres to the seed.

SEED nearly egg-shaped, covered.

OBS. Florets from two to three in each calyx. *Reich.* The species with awns have the structure of *Avena*, those without, that of *Poa*, so that this may be considered as an artificial genus. *St.*

MEL'ICA. (MELIC-GRASS. E.) *Pl. II.* fig. 16. *Gærtn.* 80.

CAL. *Husk* two valves, containing two florets. *Valves* egg-shaped, concave, nearly equal.

BLOSS. two valves. *Valve* egg-shaped, awnless, one concave, the other flat and smaller. Betwixt the two florets is a small turban-shaped, substance standing on a pedicle.

Nectary one leaf, fleshy, horizontal, surrounding the germen.

STAM. *Filaments* three, hair-like, as long as the blossom, thicker, and united at the base. *Anthers* oblong, forked at each end.

PIST. *Germen* inversely egg-turban-shaped. *Styles* two, like bristles, expanding, naked at the base. *Summits* oblong, woolly.

S. VESS. none, the blossom incloses the seed till it ripens.

SEED single, egg-shaped, furrowed on one side.

Obs. The rudiment of a third floret standing upon a little fruit-stalk betwixt the other two florets, gives the Essential Character of this genus. It consist of two rudiments, or florets, lopped, alternate. The husks rolled spirally inwards, and pellucid. Linn. To this may be added, the union of the stamens at the base, and the nectary of one leaf. Schreb. When there is only one floret in each calyx, the rudiment is placed between the inner valve of the calyx and the blossom.

SESLE'RIA. (MOOR-GRASS. E.) *Scop. Arduin. Adans. Hall. Jacq. Ic. i. Cynosurus.*

CAL. *Involucrum*, two leaves at the bottom of the spike or bunch. *Husk* two valves, containing one, two, or three florets. *Valves* egg-shaped, taper-pointed, nearly equal.

BLOSS. *Valves* two, oblong, compressed, about the length of the calyx; the outer concave, embracing the inner, toothed at the end, the keel running out into a short awn; inner flat, with the edges folded in, cloven at the end.

STAM. *Filaments* three, hair-like, longer than the blossom. *Anthers* oblong, (notched at each end. E.)

PIST. of the length of the filaments. *Germen* inversely egg-shaped, hairy. *Styles* two, bristle-shaped, upright. *Summits* pubescent.

S. VESS. the blossom inclosing the seed.

SEED single, hairy.

Obs. The above descriptions were made from a collective view of *S. sphaerocephala*. Arduin. Spec. ii. t. 17. Hall. Apf. Scheuch. App. ii. n. 30. and *S. curulea*. St.

PO'A. (MEADOW-GRASS. Pl. II. fig. 18. *Glyceria*. Br. Pr. Sm. E.)

CAL. *Husk* two valves, awnless; containing several florets pointing from two opposite lines, and collected into an oblong egg-shaped spike. *Valves* egg-shaped, tapering to a point.

BLOSS. two valves. *Valves* egg-shaped, rather acute, concave, compressed, somewhat longer than the calyx, membranous at the edges.

Nectary two leaves; leaflets acute or ragged, gibbous at the base. Schreb.

STAM. *Filaments* three, hair-like, (longer than the blossom. E.) *Anthers* forked at each end (pendulous. E.)

Pist. *Germen* roundish. *Styles* two, bent back, woolly. *Summits* like the styles.

S. Vess. The blossom adheres to the seed without opening.

SEED single, oblong, compressed, tapering at each end, covered by the blossom.

OBS. Different species vary much in the number of florets in each calyx, viz. from two to ten, or more, and even in the same species the number is not constant. (The florets are sometimes connected at their base by a condensed web of long, white, cottony, filaments. Several species have been transferred by Smith to the genus *Glyceria* of Brown, distinguished by branched stigmas and the shape of the florets. E.)

(TRIO'DIA. HEATH-GRASS. *Br. Pr.* 182. *Festuca. Linn.*
Poa. With.

CAL. of two nearly equal, clasping, awnless, acute, ovate, concave, keeled, valves, containing an ovate, imbricated, tumid *spiket*, about its own length, of several two-ranked, perfect *florets*, variously h at the base, but without any complicated web.

BLOSS. of two unequal, ovate, rigid, concave valves, closely pressed together transversely; the outer obscurely many-ribbed, not keeled; flat and expanded at the edges; deeply cloven at the summit, with an intermediate dorsal tooth, or awn, longer or shorter than the lateral points; inner smaller, lining the cavity of the outer, fringed; cloven or notched at the point.

Nectary of two scales.

STAM. *Filaments* capillary. *Anthers* prominent, pendulous.

Pist. *Germen* oval, flat. *Styles* short, distinct. *Summits* cylindrical, teathery.

SEED loose, oval, depressed, convex on the outside, concave on the inner, closely pressed between the unchanged valves of the blossom.

OBS. Hard, rigid, perennial grasses, with leafy stems. Inflorescence variously paniced. *Sm. Eng. Fl. E.*)

BRI'ZA. (QUAKING-GRASS. E.) *Pl. II. fig. 17. Gærtn.*

CAL. *Husk* two valves, expanding, containing several florets pointing from two opposite lines, collected into a heart-shaped spiket. *Valves* blunt, heart-shaped, concave, equal.

BLOSS. two valves. *Lower Valve* the size and figure of the calyx. *Superior Valve* small, flat, roundish, closing the hollow of the other.

• *Nectary* two strap-shaped leaflets, a little scalloped. Schreb.

STAM. *Filaments* three, hair-like. *Anthers* oblong, (cloven at each end, pendulous. E.)

Pist. *Germen* roundish. *Styles* two, hair-like, bent back (long. E.) *Summits* feather-like.

S. Vess. none. The blossom unchanged, contains the seed until it be ripe.

SEED single, very small, roundish, compressed.

DACTYLIS. (COCK'S-FOOT-GRASS. E.) Pl. II. f. 13.

CAL. Husk two valves, containing many florets collected into an egg-oblong spiket. *Valves* concave, keeled, convex, broader, and half egg-shaped on one side, narrower on the other: *inner* valve larger.

BLOSS. two valves. *Lower* valve large, concave, acute, pointed or awned; *inner* valve spear-shaped, acute, cloven, scarcely shorter than the other.

Nectaries two, spear-shaped, tapering to a point, gibbous at the base.

STAM. *Filaments* three, hair-like, longer than the blossom. *Anthers* oblong, forked at each end.

PIST. *Germen* egg-shaped. *Styles* two, expanding (very short. E.) *Summits* feather-like.

S. VESS. none. The blossom closes upon the seed (though unattached. E.) until it be ripe.

SEED single, oblong, furrowed on one side.

Obs. Some species have only one floret in each calyx; others, three, four, or more.

(**SPARTINA.** CORD-GRASS. *Schreb. Gen.* 43. *Dactylis. Soland. Limnetis. Rich.*

CAL. single-flowered, of two unequal, compressed, lanceolate, keeled, clasping valves; the *outer* one sometimes smallest, narrow and pointless; sometimes largest, with a rough, straight, terminal awn; *inner* cloven at the summit, with more or less of an intermediate tooth or point.

BLOSS. about the length and shape of the calyx of two lanceolate, bluntyish, clasping, compressed, awnless valves, the *innermost* rather the longest.

Nectary none.

STAM. *Filaments* capillary, not so long as the blossom. *Anthers* erect, linear, entire at the top, cloven at the base.

PIST. *Germen* elliptic-lanceolate. *Styles* combined a great part of their whole length, separate at the top. *Summits* feathery, slender, various in length.

SEED oblong, compressed, clothed with the unaltered blossom, but quite loose.

Obs. Hard, rigid, smooth, perennial, maritime grasses, with compound, close, unilateral spikes of numerous flowers. This genus is closely allied to *Dactylis*, under which it has been included by Linnæus and most Botanists; but a comparison of their characters will prove them very distinct. Scureber places *Spartina* in *Triandria Monogynia*; but a partial or temporary combination of the two styles of true Grasses is so common, and so various in species of the same genus, that it is best not to take it too strictly. Sm. Eng. Fl. E.)

CYNOSU'RUS. (DOG'S-TAIL-GRASS. E.) Pl. II. f. 28.
Gärtn. 1.

CAL. *Common Receptacle* unilateral, often leafy. *Involucrum* (sometimes) of one leaf, lateral. *Husk* two valves, containing several florets. *Valves* strap-shaped, equal, tapering to a point.

BLOSS. two valves; *outer* concave, longer; *inner* flat, awnless.

Nectary two egg-shaped acute leaflets, gibbous at the base. (Schreb.)

STAM. *Filaments* three, hair-like. *Anthems* oblong (cloven at each end. E.)

PIST. *Germen* turban-shaped. *Styles* two, woolly, reflexed. *Summits* simple.

S. VESS. none. The blossom closely wrapping round (but not united to. E.) the seed, and not opening.

SEED single, oblong, tapering at each end (furrowed on one side. E.)

Obs. *Involucrum* (proper receptacle of Smith. E.) in most species with winged clefts, or like a comb. Linn. (pectinated. Hook. E.) The number of florets is variable. Reich.

FESTU'CA. (FESCUE-GRASS. E.) Pl. II. f. 19.

CAL. *Husk* two valves, upright, containing several florets collected into a slender spiket. *Valves* awl-shaped, tapering. *Inferior Valve* the smallest.

BLOSS. two valves. *Lower* and larger valve resembling the calyx, but larger, roundish, tapering, ending in an acute point.

Nectary two leaves, leaflets egg-spear-shaped, acute, gibbous at the base; sometimes of one leaf, which is plano-concave, horizontal, notched at the end. (Schreb.)

STAM. *Filaments* three, hair-like, shorter than the blossom. *Anthems* oblong (pendulous, notched at each end. E.)

PIST. *Germen* turban-shaped. *Styles* two, short, reflexed. *Summits* simple (feathery. E.)

S. VESS. none, the blossom closely envelopes the seed, and does not open again.

SEED single, slender, oblong, very acute at each end, marked with a longitudinal furrow.

Obs. In *Festuca* the outer valve of the blossom gradually narrows into an awn; in *Bromus* and *Triticum* the awn is inserted, as it were, below the point of the valve, or the edge of the valve swells out into a thin membrane on each side of the base of the awn. In *Festuca*, the awn is an extension of the whole valve, in *Bromus* and *Triticum*, only of the keel, or midrib, as in *Avena*. St.

BRO'MUS (BROME-GRASS. E.) Pl. II. f. 20. (Sm. E.)

CAL. *Husk* two valves, expanding, containing several florets collected into a spiket. *Valves* oblong egg-shaped, taper, awnless; the *Inferior Valve* smaller.

BLOSS. two valves. The *Inferior Valve* large, the size and figure of the calyx; concave, blunt, cloven, sending out a straight *Awn* from beneath the end. The *Superior Valve* spear-shaped, small, awnless.

Nectary two-leaved; *leaflets* egg-shaped, acute, gibbous at the base. Schreb.

STAM. *Filaments* three, hair-like, shorter than the blossom. *Anthers* oblong (pendulous, notched at each end. E.)

PIST. *Germen* turban-shaped, ending in two leaflets, egg-shaped, delicate, greenish and transparent, notched at the end, upright. *Styles* two, short, reflexed, woolly. *Summits* simple (densely feathery. E.)

S. VESS. The blossom shuts close upon, and adheres to the seed, (especially by the inner valve. E.)

SEED single, oblong, covered, convex on one side, furrowed on the other (downy at the summit. E.)

(Obs. Schreber, remarking that in several of the *Brome* grasses the awn does not come out from below the outer glume, but of which the point runs out into an awn, has attempted to improve the character of the genus by a strict attention to the germen; and Roth thinks these plants might be formed into two divisions, viz. those with the awn below the top of the exterior glume, and those in which this glume terminates in an awn.—*Annals of Botany*, vol. i. E.)

STIPA. (FEATHER-GRASS. E.) Pl. II. f. 14. (Sm. E.)

CAL. *Husk* two valves, tapering to a point, flexible, inclosing one floret.

BLOSS. two valves. *Outer Valve*, its point terminated by a very long, straight, twisted awn, jointed at the base. *Inner Valve* strap-shaped, without an awn, as long as the outer valve.

Nectary two-leaved; *leaflets* strap-spear-shaped, membranous, gibbous at the base. Schreb.

STAM. *Filaments* three, hair-like (shorter than the blossom. E.) *Anthers* strap-shaped (upright. E.)

PIST. *Germen* oblong. *Styles* two, hairy, united at the base. *Summits* downy (or feathery. E.)

S. VESS. The husk adhering.

SEED single, oblong, covered (closely enveloped in the hardened outer valve of the blossom, which is very sharp, and barbed with bristles at the base, so as to penetrate and fix itself in the earth. E.)

AVE'NA. (OAT. OAT-GRASS. E.) Pl. II. f. 21. *Tourn.* 297.

CAL. *Husk* two valves, most frequently containing several florets loosely collected. *Valves* large, loose, spear-shaped, distended, acute, awnless.

BLOSS. two valves. *Inferior Valve* the size of the calyx, but harder, somewhat cylindrical, distended, tapering to a point at each end, sending out a dorsal *Awn* spirally twisted, and bent back as if jointed.

Nectary two-leaved; *leaflets* spear-shaped, gibbous at the base. Schreb.

STAM. *Filaments* three, hair-like (shorter than the blossom. E.) *Anthers* oblong, forked at each end.

PIST. *Germen* blunt. *Styles* two, reflexed, hairy. *Summits* simple.

S. VESS. The blossom shuts close upon, and adheres to the seed without opening again.

SEEDS single, slender, oblong, tapering to a point at each end, marked with a furrow lengthwise (retaining its awn: sometimes downy. E.)

Obs. The Awn proceeding from the back of the blossom and being twisted and jointed, constitutes the Essential Character of this genus. Linn. (Panicle compound, or simple. Glumes shining. Sm. E.)

LAGURUS. (HARE'S-TAIL-GRASS. E.) Pl. II. f. 32. *Gærtn.* 1.

CAL. *Husk* one-flowered, two-valved. *Valves* long, strap-shaped, open, very slender, each ending in a downy awn.

BLOSS. two-valved, longer than the calyx. *Outer valve* longer, ending in two small straight awns. *Inner valve* small, tapering to a point. *Awn* from the middle of the back of the outer valve of the blossom, twisted and bent.

Nectary two-leaved, leaflets spear-shaped, blunt, gibbous at the base.

STAM. *Filaments* three, hair-like (shorter than the calyx. E.) *Anthers* oblong (cloven at each end. E.)

PIST. *Germen* turban-shaped. *Styles* two, bristle-shaped, woolly. *Summits* simple.

S. VESS. none. The blossom adheres to the seed.

SEED single, oblong, covered, awned.

ARUNDO. (REED. E.) Pl. II. fig. 22.*

CAL. *Husk* two upright valves, containing one or more florets. *Valves* oblong, tapering to a point, awnless. One *Valve* shorter.

BLOSS. two valves. *Valves* as long as the calyx, oblong, tapering to a point, with soft down rising from the base, and nearly as long as the blossom (the outer one with or without an *awn* from some part of the keel. Sm. E.)

Nectary two-leaved, very minute. Schreb.

STAM. *Filaments* three, hair-like. *Anthers* forked at each end.

PIST. *Germen* oblong. *Styles* two, hair-like, reflexed, woolly. *Summits* simple.

S. VESS. The blossom adheres to the seed without opening.

SEED single, oblong, tapering to a point at each end, furnished with long down at the base (which serves as wings to it. E.)

LOLIUM. (DARNEL. RYE-GRASS. E.) Pl. II. f. 27.

CAL. *Common Receptacle* (or main stalk, E.) lengthened into a spike. The florets pointing from two opposite lines, and each pressed close to a bend in the straw.

Husk one valve, awl-shaped, permanent; standing opposite to a bend in the receptacle.

BLOSS. two valves. *Inferior Valve* narrow, spear-shaped, rolled inwards, tapering to a point, as long as the calyx. *Superior Valve* shorter, more blunt, strap-shaped, concave on the upper part.

Nectary two-leaved, leaflets egg-shaped, blunt, gibbous at the base.
Schreb.

STAM. *Filaments* three, hair-like, shorter than the blossom. *Anthers* oblong.

PIST. *Germen* turban-shaped. *Styles* two, hair-like, reflexed. *Summits* downy.

S. VESS. none. The blossom encloses the seed until it be ripe.

SEED single, oblong, compressed, convex on one side, flat and furrowed on the other.

OBS. The angles in the spike-stalk lying in the same plane with the *spikets* of *florets*, supply the defect of inner valves to the calyx. Linn. But sometimes the calyx has a minute inner valve, as in *L. temulentum*.

ROTTBOL'LIA. (HARD-GRASS. E.) Pl. H. f. 3. Linn. fil.

Common Receptacle a long jointed spike-stalk, in a cylindrical spike; the joints alternately hollowed, and set with *florets* of two kinds; one with a calyx of one valve, hermaphrodite, sessile on the thickened projection of the receptacle; the other two-valved; one on each side of the former, but rather lower, and alternating with it. These are something smaller, and are either hermaphrodites or females, though in some species they are only of one of these two kinds.

Hermaphrodite, of one valve.

CAL. *Husk* one valve, including one *floret*. *Valve* gristly, egg-oblong, lopped at the base, often notched at the end, scored, closing the hollow in the spike-stalk joint like a cover; the hollow serving the purpose of another valve.

BLOSS. *Husk* two valves, parallel to that of the calyx, and shorter. *Valves* spear-shaped, acute, concave, membranous, transparent and greenish. *Outer* valve longer, its edges turned inwards.

Nectary one-leaved, spear-shaped, blunt, membranous, transparent and greenish, longer than the *germen*.

STAM. *Filaments* three, hair-like. *Anthers* oblong, cloven at each end.

PIST. *Germen* oblong. *Styles* two, thread-shaped. *Summits* oblong, downy, expanding, protruding.

S. VESS. none. The valve of the calyx confines the seed in the hollow of the spike-stalk, until the latter separate at the joints.

SEED single, oblong.

Hermaphrodite *florets* with two husks.

CAL. *Husk* two valves, containing one *floret*, placed transversely. *Valves* gristly, oblong, sharp-pointed, scored; *outer* valve somewhat shorter; with a short awn.

BLOSS. *Husk* two-valved, placed transversely. *Valves* spear-shaped, membranous, shorter than the calyx; *outer* concave, longer; *inner* edges rolled inwards.

Nectary as above, or else of two spear-shaped leaflets, tapering to a point.

STAM. as above.

PIST. *Germen* oblong, (or egg-shaped.) *Styles* two, hair-like. *Summits* as above.

S. VESS. none. The calyx and blossom protect the seed, which is fixed to the spike-stalk, until it separate at the joints.
SEED single, egg-shaped, or oblong.

Obs. *R. incurvata* has all the florets with two husks, and the nectary of two leaflets. Schreb.

E'LYMUS. (LYME-GRASS. E.) Pl. II. f. 26.

CAL. Common Receptacle lengthened into a spike.

Husk four leaves, pointing from two opposite lines, two of the leaves, which are awl-shaped, belonging to each little spike.

BLOSS. two valves. Outer Valve large, tapering to a point, furnished with an awn. Inner Valve flat.

Nectary two-leaved, leaflets oblong, acute, fringed. Schreb.

STAM. Filaments three; hair-like, very short. Anthers oblong, cloven at the base.

PIST. Germen turban-shaped. Styles two, wide apart, hairy, bent inwards. Summits simple.

S. VESS. none. The blossom incloses the seed.

SEEDS single, strap-shaped, convex on one side, covered.

Obs. The calyx may be considered as a two-leaved husk, and two of these husks growing together.

HORDEUM. (BARLEY. E.) Pl. II. f. 25. Tourn. 295.

CAL. Common Receptacle lengthened into a spike. Husks six leaves, containing three florets. Florets sessile. Leaves strap-shaped, tapering to a point, distant, in pairs.

BLOSS. two valves. Lower Valve longer than the calyx, distended, angular, egg-shaped, but pointed, ending in a long awn. Inner Valve spear-shaped, flat, smaller.

Nectary two-leaved; leaflets egg-shaped, acute, fringed. Schreb. The length of the germen. Sr.

STAM. Filaments three, hair-like, shorter than the blossom. Anthers oblong.

PIST. Germen egg-turban-shaped. Styles two, woolly, reflexed. Summits the same.

S. VESS. none. The blossom grows round the seed without opening.

SEED single, oblong, distended, angular, tapering at each end, furrowed on one side.

Obs. In some species all the three florets that grow together are fertile, and have both stamens and pistils; but in others, the middle floret alone is fertile, and furnished with stamens and pistils; the lateral florets having only stamens. Linn.

TRITICUM. (WHEAT. WHEAT-GRASS. E.) Pl. II. f. 24.
Tourn. 292, 293. *Gærtn.* 81.

CAL. *Common Receptacle* lengthened into a spike. *Husk* two valves, containing about three florets. *Valves* egg-shaped, bluntish, concave. **BLOSS.** two valves, nearly equal, the size of the calyx. *Outer Valve* distended, blunt, but pointed. *Inner Valve* flat.

Nectary two-leaved; *leaflets* acute, gibbous at the base. Schreb.

STAM. *Filaments* three, hair-like. *Anthers* oblong, forked at each end.

PIST. *Germen* turban-shaped. *Styles* two, hair-like, reflexed. *Summits* feather-like.

S. VESS. none. The blossom contains the seed until it be ripe.

SEED single, egg-oblong, blunt at each end, convex on one side, furrowed on the other.

OBS. The Outer Valve of the blossom in some species is furnished with an awn; in others not. The *middle* floret is frequently male. Linn. The disposition of the spikets constitutes the only difference between this genus and *Bromus*. Scop. (Spikets solitary at each tooth, lateral, contrary to the main stalk, many-flowered. Sm. E.)

• TRIGYNIA.

AMARAN'THUS. (AMARANTH. BLITE. E.) *Tourn.* 118.
 H. I. K. L.

Male flowers on the same plant with the female ones.

CAL. *Cup*, leaves five or three, upright, coloured, permanent, spear-shaped, acute.

BLOSS. none; unless the calyx be considered as such.

STAM. *Filaments* five or three, hair-like, upright, but standing rather open, as long as the cup. *Anthers* oblong, versatile.

Female flowers in the same bunch with the others.

CAL. *Cup* the same as the other.

BLOSS. none.

PIST. *Germen* egg-shaped. *Styles* three, short, awl-shaped. *Summits* simple, permanent.

S. VESS. *Capsule* egg-shaped, somewhat compressed, as is also the cup; of the size of the cup which contains it, and coloured like that, three-beaked, cut round, one-celled.

SEED single, globular, compressed, large.

OBS. Only one species is indigenous to Britain, and that has but three stamens in a flower.

MON'TIA. (BLINKS. E.) *Mich.* 13.

CAL. *Cup* two leaves; *leaflets* egg-shaped, concave, blunt, upright, permanent.

BLOSS. one petal, with five divisions; the three alternate segments smaller, and supporting the stamens.

STAM. *Filaments* three, hair-like, as long as the blossom, into which they are inserted. *Anthers* small.

PIST. *Germen* turban-shaped. *Styles* three, woolly, expanding. *Summits* simple.

S. VESS. *Capsule* turban-shaped, blunt, covered, of one cell and three valves.

SEEDS three, roundish.

OBS. The cup has frequently three leaves, and then there are often five stamens. *Lin.*

TILLÆA. (TILLÆA. RED-SHANKS. E.) *Rose* 2. 2. *Gærtn.* 112.

CAL. *Cup* with three divisions, flat. *Segments* egg-shaped, large. (*Segments* pointed, concave, approaching. *Rose.*)

BLOSS. *Petals* three, egg-shaped, pointed, flat, mostly smaller than the cup. (*Petals* concave. *Rose.*)

STAM. *Filaments* three, simple, shorter than the blossom. *Anthers* small.

PIST. *Germens* three. *Styles* simple. *Summits* blunt.

S. VESS. *Capsules* three, oblong, tapering, reflexed, as long as the blossom, opening lengthwise upwards.

SEEDS two, egg-shaped.

OBS. *T. muscosa* being the only species yet found with us, and its structure leading us to this Class, it is placed here; but the three foreign species having four stamens, four pistils, and four capsules, the genus is properly arranged by *Linnaeus*, in the Class Tetrandria, Order Tetragynia. The figure of *Gartner* referred to above, and also by *Schreber*, is *T. muscosa* in its cultivated state, when it bears flowers with five stamens, five pistils, and five capsules.

HOLOS'TEUM. (JAGGED CHICK-WEED. E.) *E. Bot.* 27.

CAL. *Cup* five leaves. *Leaflets* egg-shaped, permanent.

BLOSS. *Petals* five, deeply divided, blunt.

STAM. *Filaments* three, hair-like, shorter than the blossom. *Anthers* roundish.

PIST. *Germen* roundish. *Styles* three, hair-like. *Summits* bluntish.

S. VESS. *Capsule* one cell, rather cylindrical, opening at the top.

SEEDS several, roundish, (stalked, rough. E.)

OBS. *H. umbellatum* has petals with two or three teeth; stamens three or five; styles three or four; capsule with six valves at its apex. *Schreb.* (*Petals* variously and unequally jagged at each side, not deeply and regularly cloven, as the character of *Cerastium* requires. In our specimens, stamens never more than three. *Sm. E.*)

POLYCAR'PON. (ALL-SEED. E.)

CAL. *Cup* five leaves. *Leaflets* egg-shaped, concave, keeled, ending in a sharp point, permanent.

BLOSS. *Petals* five, very short, egg-shaped, notched at the end, alternate, permanent.

STAM. *Filaments* three, (sometimes five. E.) thread-shaped, half the length of the calyx. *Anthers* roundish, (two-lobed. E.)

PIST. *Germen* egg-shaped. *Styles* three, very short. *Summits* blunt.

S. VESS. *Capsule* egg-shaped, of one cell and three valves.

SEEDS many, egg-shaped, (rough, on an oblong central receptacle. E.)

(OBS. Mr. Ferdinand Bauer found the style and stigma to be solitary in such of the flowers as have five stamens. Eng. Fl. E.)

ENNEAGYNIA.

EM'PETRUM. (CROW-BERRY. CRAKE-BERRY. E.) *Tourn.* 421.

Male flowers.

CAL. *Cup* with three divisions. *Segments* egg-shaped, permanent.

BLOSS. *Petals* three, oblong egg-shaped, narrowest at the base, larger than the cup, shrivelling.

STAM. *Filaments* three, hair-like, very long, hanging down. *Anthers* upright, short, cloven.

Female flowers.

CAL. *Cup* as above.

BLOSS. *Petals* as above.

PIST. *Germen* depressed. *Style* scarcely any. *Summits* nine, bent back, but expanding.

S. VESS. *Berry* round and flat, depressed, larger than the cup, with one cell.

SEEDS nine, placed in a jointed circle, gibbous on one side, angular on the other.

(OBS. Sometimes, though very rarely, flowers have been found containing both stamens and pistils.)

CLASS IV.

TETRANDRIA.

THE stamens in this Class are four, and all of the same length ; whereas in the class Didynamia, which is likewise composed of flowers of four stamens, the stamens are unequal in length, two of them being long and two short.

TETRANDRIA (Four Stamens.)

MONOGYNIA (One Pistil.)

<i>Dipsacus.</i>	<i>Centunculus.</i>
<i>Scabiosa.</i>	<i>Sanguisorba.</i>
<i>Eriocaulon.</i>	<i>Epimedium.</i>
<i>Sherardia.</i>	<i>Cornus.</i>
<i>Asperula.</i>	<i>Parietaria.</i>
<i>Galium.</i>	<i>Urtica.</i>
<i>Rubia.</i>	<i>Viscum.</i>
<i>Exacum.</i>	<i>Hippophaë.</i>
<i>Littorella.</i>	<i>Alchemilla.</i>
<i>Plantago.</i>	

DIGYNIA (Two Pistils.)

<i>Buffonia.</i>	<i>Myrica.</i>
<i>Alnus.</i>	<i>Cuscuta.</i>
<i>Betula.</i>	

TRIGYNIA (Three Pistils.)

Buxus.

TETRAGYNIA (Four Pistils.)

<i>Ilex.</i>	<i>Sagina.</i>
<i>Potamogeton.</i>	<i>Mænchia.</i>
<i>Ruppia.</i>	<i>Radiola.</i>

TETRANDRIA. MONOGYNIA.

DIP'SACUS. (TEASEL. E.) *Tourn.* 265. *Gærtn.* 86.

CAL. *Common Cup* of many leaves containing many florets. *Leaflets* longer than the florets, flexible, permanent. *Proper Cup* superior, scarcely perceptible.

BLOSS. *general*, regular. *Individuals* monopetalous, tubular. *Border* with four clefts, upright; the outer *Segment* larger and more acute.

STAM. *Filaments* four, hair-like, longer than the blossom. *Anthers* fixed sidewise.

PIST. *Germen* beneath. *Style* thread-shaped, as long as the blossom. *Summit* simple.

S. VESS. none.

SEED solitary, resembling a four-sided pillar, crowned with the entire margin of the *proper Cup*. *Receptacle* common, conical. *Florets* separated by long chaff.

SCABIO'SA. (SCABIOUS. E.) *Tourn.* 263, 264. *Gærtn.* 86.

CAL. *Common Cup* of many leaves, expanding, containing many florets. The *Leaflets* fixed upon, and surrounding the receptacle in several rows, the inner ones become gradually smaller.

Proper Cup double, superior.

Outer Cup shorter, membranous, plaited, permanent.

Inner Cup with five divisions. *Segments* awl-shaped, but very slender.

BLOSS. *general*, regular, but mostly composed of irregular florets.

Individuals monopetalous spreading, tubular, with four or five clefts, equal or unequal.

STAM. *Filaments* four, between awl and hair-shaped. *Anthers* oblong, fixed sidewise.

PIST. *Germen* beneath, rolled in a proper sheath, like a little cup.

Style thread-shaped, as long as the blossom. *Summit* blunt, obliquely notched at the end.

S. VESS. none.

SEED solitary, egg-oblong, rolled in a cover, variously crowned by the *proper Cup*.

Receptacle common, convex, chaffy or naked.

Obs. *Outer blossoms* generally larger and more irregular. *Seeds* crowned differently in different species. The *florets* having four or five clefts, afford a primary specific distinction. Linn.

ERIOCAULON. (PIPE-WORT. E.) *Phil. Trans.* vol. 59, p. 246, t. 12.

Male and *Female* florets in a terminating hemispherical head; the former in the centre, the latter forming two rows in the circumference.

CAL. *common*, scales numerous, roundish, concave, membranous, black, fringed towards the top.

Male florets, central, numerous.

Cup (proper) two (or three. E.) leaved; leaflets wedge-shaped, concave, fringed.

Bloss. monopetalous, funnel-shaped, mouth two (or three parted, E.) fringed.

STAM. *Filaments* four, thread-shaped, as long as the blossom. *Anthers* roundish.

Female florets in the circumference.

Cup (proper) two-leaved; leaflets egg-shaped, concave, black, fringed at the top, tapering at the base into a narrow claw.

Bloss two-petaled; petals oblong, concave, tapering at the base into narrow claws, fringed at the top and on the back.

PIST. *Germs* roundish, but flattened. *Style* short. *Summits* two (or three. E.) thread-shaped, long.

S. VESS. *Capsule* roundish, but compressed, two-celled.

SEEDS smooth, one in each cell.

Obs. This generic character is taken from the very excellent description of *Eriocaulon*, given by Dr. Hope in the 59th volume of the Phil. Trans. and though it may not apply to the whole genus, as the foreign species have not hitherto been sufficiently examined, whatever may be its place in the system hereafter, it was judged proper at present, to insert it where an English botanist would expect to find it. Hudson has since called it *Nasmythia*, and given a generic description which corresponds with the above, except in the following particulars. *Filaments* shorter than the blossom. *Female florets* in the circumference very numerous. *Germs* superior, double. *Style* bristle-like, divided. *Seeds* roundish.

SHERARDIA. (FIELD-MADDER. E.) Gærtn. 24.

CAL. *Cup* small, with four teeth, superior, permanent.

BLOSS. one petal, funnel-shaped. *Tube* cylindrical, long. *Border* with four (rarely three, E.) divisions. *Segments* flat, acute (recurved. E.)

STAM. *Filaments* four, situated at the top of the tube. *Anthers* (roundish, two-lobed. E.)

PIST. *Germs* beneath, double, oblong. *Style* thread-shaped, cloven at the top. *Summits* little knobs.

S. VESS. none. *Fruit* oblong, crowned, separable lengthwise into two seeds.

SEEDS two; oblong, convex on one side; flat on the other; with three sharp points at the top.

Obs. *S. arvensis* has generally five or six teeth on the cup.

ASPERULA. (WOODRUFF. E.) Curt. 249. (Sm. E.)

CAL. *Cup* small, four-toothed, superior.

BLOSS. monopetalous, funnel-shaped. *Tube* long, cylindrical. *Border* with four divisions, segments oblong, blunt, reflexed.

STAM. *Filaments* four; situated in the mouth of the tube. *Anthers* (of two round lobes, alternate with the segments. E.)

Pist. *Germina* beneath, double, roundish. *Style* thread-shaped, cloven at the top. *Summits* capitate.

S. Vess. two dry globular *Berries* adhering together.

SEEDS solitary, roundish, large.

Obs. The distinction between *Asperula* and *Galium*, taken from the length of the tube of the blossom, is sufficiently obvious in their respective extremes, but in some of the former it becomes so short that the two genera seem to run into one. Wigg.

GAL'IUM. (GOOSE-GRASS. BED-STRAW. E.) *Tourn.* 39. *Gærtn.* 24.

CAL. *Cup* very small, with four teeth, superior.

Bloss. monopetalous, wheel-shaped, with four divisions, acute, without a tube.

STAM. *Filaments* four, awl-shaped, shorter than the blossom. *Anthers* of two round cells. E.)

Pist. *Germina* double. *Style* thread-shaped, cloven half way down, as long as the stamens. *Summits* globular.

S. Vess. two dry globular *Berries*; united.

SEEDS solitary, large, kidney-shaped.

Obs. In *G. cruciatum* male flowers are sometimes found, and the number of stamens varies, as likewise do the divisions of the blossom, from three to five.

RUBIA. (MADDER. E.) *Tourn.* 38.

CAL. *Cup* very small, with four teeth, superior (in some instances none apparent. E.)

Bloss. monopetalous, bell-shaped, with four divisions, without a tube.

STAM. *Filaments* four, awl-shaped, shorter than the blossom. *Anthers* simple (two round cells. E.)

Pist. *Germina* beneath, double. *Style* thread-shaped, cloven at the top. *Summits* capitate.

S. Vess. two smooth *Berries*, united.

SEED solitary, roundish, with a central depression.

Obs. The blossom has frequently five divisions. Linn. (and then occasionally five stamens. E.)

EX'ACUM. (GLNTIANELLA. E.) *Gærtn.* 114. (Sm. E.)

CAL. *Cup* four leaves; *leaflets* egg-shaped, blunt, upright but expanding, permanent.

Bloss. monopetalous, permanent. *Tube* globular, as long as the calyx. *Border* four-cleft. *Segments* roundish, expanding (imbricated in the bud. E.)

STAM. *Filaments* four, thread-shaped, fixed to the tube, as long as the border. *Anthers* roundish (of two cells. E.)

Pist. *Germina* roundish, filling the tube. *Style* thread-shaped, nearly upright, as long as the border. *Summit* capitate.

S. VESS. *Capsule* roundish, compressed, two-furrowed, two-celled, as long as the calyx.

SEEDS numerous, fixed to the central receptacle, (rough. E.)

(Oss. Some recent authors consider the calyx as having but one leaf, divided into four segments. E.)

LITTOREL'LA. (SHORE-WEED. E.) *Fl. Dan.* 170.

Male flowers.

CAL. *Cup* four leaves, upright.

BLOSS. *Petal* one. *Tube* as long as the cup. *Border* with four divisions, upright, permanent.

STAM. *Filaments* four, thread-shaped, very long, inserted into the receptacle. *Anthers* heart-shaped.

Female flowers on the same plant.

CAL. none.

BLOSS. monopetalous, conical, mouth mostly with four clefts, permanent (sometimes unequally three-cleft. E.)

PIST. *Germs* oblong. *Style* thread-like, very long. *Summit* acute.

S. VESS. The blossom investing the seed.

SEED. *Nut* of one cell.

Oss. It has the flower of a *Plantago*, but not the fruit. Linn.

PLANTA'GO. (PLANTAIN. E.) *Tourn.* 48. *Gærtn.* 51.

CAL. *Cup* four-cleft, very short, upright, permanent.

BLOSS. monopetalous, permanent, shrivelling. *Tube* cylindrical, but somewhat gibbous. *Border* four-cleft, reflexed. *Segments* egg-shaped, acute.

STAM. *Filaments* four, hair-like, upright, exceedingly long. *Anthers* rather long, compressed, fixed sidewise (of two cells. E.)

PIST. *Germs* egg-shaped. *Style* thread-shaped, half as long as the stamens. *Summits* simple.

S. VESS. *Capsule* egg-shaped, with two cells, cut round. *Partition* loose.

SEEDS several, oblong, (sessile, sometimes solitary, or in pairs. E.)

Oss. The calyx in some species is equal, in others unequal. Linn.

CENTUN'CULUS. (CHIFF-WEED. E.) *Gærtn.* 50. (Sm. E.)

CAL. *Cup* with four clefts, expanding, permanent. *Segments* acute, spear-shaped, longer than the blossom.

BLOSS. monopetalous. *Tube* somewhat globular. *Border* flat, with four clefts. *Segments* nearly egg-shaped.

STAM. *Filaments* four, nearly as long as the blossom. *Anthers* simple, (roundish, of two cells. E.)

PIST. *Germs* globose, within the tube of the blossom. *Style* thread-shaped, as long as the blossom, permanent. *Summit* simple.

S. VESS. *Capsule* globular, of one cell, cut round, (almost membranous. E.)

SEEDS several, roundish, very small.

SANGUISOR'BA. (BURNET. E.) *Fl. Dan.* 97. (Sm. E.)

CAL. *Cup* two leaves. *Leaflets* opposite, very short, deciduous.

BLOSS. monopetalous, wheel-shaped, with four divisions. *Segments* egg-shaped, blunt, united by the claws.

STAM. *Filaments* four, broader upwards, as long as the blossom. *Anthers* small, roundish (of two cells. E.)

PIST. *Germen* quadrangular, situated between the cup and the blossom. *Style* thread-shaped, very short. *Summit* blunt, (notched. E.)

S. VESS. *Capsule* small (of one cell, quadrangular. E.)

SEEDS small, (only one or two. E.)

Obs. The blossom has sometimes five clefts. (The corolla of Linnæan Botanists has in this genus, from its affinity to the Icosandria Class, been deemed a calyx by Jussieu. E.)

EPIME'DIUM. (BARREN-WORT. E.) *Tourn.* 117.

CAL. *Cup* four leaves. *Leaflets* egg-shaped, blunt, concave, expanding, small, placed directly under, not alternating with the petals, deciduous.

BLOSS. *Petals* four, egg-shaped, blunt, concave, expanding.

Nectaries four, as large as the petals, leaning against them, glass-shaped, round at the bottom, attached to the receptacle by the rim of the orifice.

STAM. *Filaments* four, awl-shaped, pressing on the style. *Anthers* oblong, upright, two-celled, two-valved, opening from the base upwards, the partition loose.

PIST. *Germen* oblong (with a furrow along the back. E.) *Styles* shorter than the germen, as long as the stamens. *Summit* simple.

S. VESS. *Pod* oblong, tapering to a point, one-celled, two-valved.

SEEDS many, oblong.

COR'NUS. (CORNEL. E.) *Tourn.* 410. *Gærtn.* 26.

CAL. *Involucrum* generally four leaves, including several florets. *Leaflets* egg-shaped, coloured, deciduous, two opposite, smaller. *Cup* very small, four-toothed, superior, deciduous.

BLOSS. *Petals* four, oblong, acute, flat, smaller than the involucrum.

STAM. *Filaments* four, awl-shaped, upright, longer than the blossom. *Anthers* roundish, fixed sidewise.

PIST. *Germen* beneath, roundish. *Style* thread-shaped, as long as the blossom. *Summit* blunt.

S. VESS. *Drupa* nearly globular, dimpled.

SEED a heart-shaped or oblong nut, with two cells, (each containing one kernel. E.)

PARIETA'RIA. (WALL-PELLITORY. E.) *Tourn.* 289.

Two *Hermaphrodite* flowers inclosed within one flat involucrum of six leaves; the two opposite and outer leaflets the largest.

CAL. *Cup* one leaf with four clefts, flat, blunt, the size of half the involucrum.

BLOSS. none, unless the cup be considered as such.

STAM. *Filaments* four, awl-shaped, longer than the cup, bursting it open, permanent. *Anthers* double.

PIST. *Germen* egg-shaped. *Style* thread-shaped, coloured. *Summit* (tufted, capitate. E.)

S. VESS. none. The *Cup* becoming longer, larger, and bell-shaped, and its segments approaching, closes upon the seed.

SEED single, egg-shaped.

One *Female* flower placed between the other two, within the same involucre.

CAL. as above.

BLOSS. none.

PIST. as above.

S. VESS. none. *Cup* slender, inclosing the fruit.

SEED as above.

URTICA. (NETTLE. E.) *Tourn.* 308.

Male flowers.

CAL. *Cup* four leaves, circular, concave, blunt.

BLOSS. *Petals* none.

Nectary in the centre of the flower, glass-shaped, entire, narrower at bottom, very small.

STAM. *Filaments* four, awl-shaped, as long as the cup, expanding, one placed within each leaf of the cup. *Anthers* with two cells.

Female flowers upon the same, or upon a different plant.

CAL. *Cup* with two valves, egg-shaped, concave, upright, permanent.

BLOSS. none.

PIST. *Germen* egg-shaped. *Style* none. *Summit* woolly.

S. VESS. none. *Cup* closing.

SEED single, egg-shaped, compressed, blunt, polished.

VISCUM. (MISLETOE. E.) *Tourn.* 380. *Gærtn.* 27. (Sm. E.)

Male flowers.

CAL. none.

BLOSS. *Petals* four, dilated, and cohering at their base, like the leaves of a calyx.

STAM. four. *Filaments* none. *Anthers* oblong, tapering, one fixed to each petal.

Female flowers mostly growing opposite the other.

CAL. slightly bordered.

BLOSS. *Petals* four, egg-shaped, small, sessile on the germen, deciduous.

PIST. *Germen* beneath, oblong, three-edged, indistinctly crowned with a border with four clefts. *Style* none. *Summit* blunt, a little notched.

S. VESS. *Berry* globular, with one cell, smooth.

SEED single, inversely heart-shaped, compressed, blunt, fleshy,

HIPPO'PHAE. (SEA-BUCKTHORN. E.) *Tourn.* 481; *Rhamnoides*. *Gærtn.* 42.

Male flowers.

CAL. Cup one leaf, divided into two parts, forming two valves, but joined at the base. *Segments* circular, blunt, concave, upright, but the points approaching, open at the sides.

BLOSS. none.

STAM. *Filaments* four, very short. *Anthers* oblong, angular, nearly as long as the cup.

Female flowers.

CAL. Cup one leaf, egg-oblong, tubular, club-shaped, cloven at the rim, deciduous.

BLOSS. none.

PIST. *Germen* roundish, small. *Style* simple, very short. *Summit* rather thick, oblong, upright, twice as long as the cup.

S. VESS. *Berry* nearly globular, with one cell.

SEED single, oblong, (invested with a double coat. E.)

Obs. In *H. Rhamnoides* an hermaphrodite flower has sometimes been found amongst the male flowers. Schreb.

ALCHEMIL'LA. (LADIES'-MANTLE. E.) *Tourn.* 289. *Gærtn.* 73.

CAL. Cup one leaf, tubular, permanent. *Rim* flat, with eight divisions; every other *Segment* smaller.

BLOSS. none.

STAM. *Filaments* four, awl-shaped, upright, small, standing on the mouth of the calyx. *Anthers* roundish.

PIST. *Germen* egg-shaped. *Style* thread-shaped, as long as the stamens, standing on the base of the *germen*. *Summit* globular.

S. VESS. none. The neck of the cup closes upon the seed, and does not open again.

SEED solitary, oval, compressed.

Obs. *A. vulgaris* has sometimes two seeds.

DIGYNIA.

BUFFO'NIA. (BUFFONIA. E.)

CAL. Cup four-leaved, upright, permanent. *Leaflets* awl-shaped, keeled, membranous at the edges.

BLOSS. *Petals* four, oval, upright, equal, notched at the end, shorter than the calyx.

STAM. *Filaments* four, equal, as long as the *germen*. *Anthers* double.

PIST. *Germen* egg-shaped, compressed. *Styles* two, as long as the *Summits* simple (capitate. E.)

S. VESS. *Capule* oval, compressed, of one cell and two valves.

SEEDS two, oval, compressed, but marked with a little protuberance; convex on one side, (large. E.)

OBS. Lœffling thought he once found four stamens, but afterwards altered his opinion. Alstr  mer often observed four. Gerard sometimes four, sometimes two, and rarely three. Linn.

(ALNUS. ALDER-TREE. *G  rtn. De Cand. Hook. Betula. Linn.*

Male flowers.

CAL. *Catkin* long, cylindrical, pendulous. *Scales* one-leaved, three lobed, and three flowered.

BLOSS. single, quadri-partite; segments unequal.

STAM. four: *Filaments* very short.

Female flowers.

CAL. *Catkin* small, ovate. *Scales* one-leaved, subtrifid, two flowered.

BLOSS. none.

PIST. *Styles* two.

SEEDS. compressed; (considered a *Nut* by some authors.)

OBS. Flowers collected into imbricated catkins. E.)

(BETULA. BIRCH-TREE. *Tourn. 360. 359. G  rtn. 90.*

Male flowers.

CAL. *Catkin* tiled on every side, flaccid, cylindrical. *Scales* three flowered, with two very minute scales, one on each side the larger scale. Three equal florets fixed to the centre of each scale of the calyx.

Cup to each floret, of one leaf, small, entire, but with three divisions. *Segments* egg-shaped, blunt.

BLOSS. none.

STAM. *Filaments* ten to twelve; small. *Anthers* roundish.

Female flowers on the same plant.

CAL. *Catkin* cylindrical, roundish, tiled. *Scales* three-flowered, imperfectly three-lobed.

BLOSS. none.

PIST. *Germen* to each flower, compressed, two-celled, one abortive.

Styles two, like bristles. *Summits* simple.

S. VESS. none; each scale of the catkin protects the seeds of two florets.

SEEDS solitary, (a *nut* according to Hooker), compressed, winged with a membranous margin. E.)

OBS. In *B. alba* and *B. nana* the catkins are cylindrical, the scales three-forked, and the seeds have a double lateral border. In *B. ulna* the catkin forms a kind of roundish cone, the scales are circular, and the seeds are angular, not bordered. Linn. (Hence constituting a distinct genus, and now called *Alnus glutinosa*. These generic distinctions are well illustrated in G  rtner, pl. 90, and that author observes, "Ergo abunde *Alnus* & *Betula* differ, ut non carpologicis tantum, sed et anthologicis ab invicem separari debeant," p. 55. In *Betula* the number of stamens remains an anomalism. E.)

MYRI'GA. (GALE. DUTCH-MYRTLE. E.) *Gærtn.* 39.*Male flowers.*

CAL. *Catkin* egg-oblong, tiled on every side, flaccid, consisting of *scales* inclosing a single flower, crescent-shaped, tapering to a blunt point, concave.

Proper Cup. none.

BLOSS. none.

STAM. *Filaments* four, (rarely six), thread-shaped, short, upright.

AN. *Anthers* large, double, with cloven lobes.

Female flowers.

CAL. as above.

BLOSS. none.

PIST. *Germen* somewhat egg-shaped. *Styles* two, thread-shaped, longer than the cup. *Summits* simple.

S. VESS. *Berry* of one cell.

SEED single.

Obs. *M. Gale* has four stamens. The berry is dry, or like a leathery crust, compressed at the end, and three-lobed. Linn.

CUS'CUTA. (DODDER. E.) *Tourn.* 422. *Gærtn.* 62.

CAL. *Cup* one leaf, glass or bell-shaped, four-cleft, blunt, fleshy at the base.

BLOSS. one petal, egg-shaped a little longer than the cup. *Mouth* four-cleft, blunt.

Nectary four scales, strap-shaped, cloven at the end, acute, united to the blossom at the base of the stamens.

STAM. *Filaments* four, awl-shaped, as long as the cup. *Anthers* roundish.

PIST. *Germen* nearly globular. *Styles* two, upright, short. *Summits* simple.

S. VESS. fleshy, roundish, two-celled, cut round.

SEEDS in pairs.

Obs. In some species five is the prevailing number in the parts of the flower. Linn.

BUX'US. (Box. E.) *Tourn.* 345. "*Male flowers* projecting from the buds of the tree.

CAL. *Cup* three leaves; *leaflets* circular, blunt, concave, expanding.

BLOSS. *Petals* two, circular, concave, resembling the cup, but larger.

STAM. *Filaments* four, awl-shaped, upright, but expanding, generally longer than the cup. *Anthers* upright, double.

PIST. *Germen* only a rudiment, without style or summit.

Female flowers in the same bud with the others.

CAL. *Cup* four leaves; *leaflets* circular, blunt, concave, expanding.

BLOSS. *Petals* three, circular, concave, resembling the cup, but larger.

PIST. *Germen* roundish, with three blunt edges, ending in three very short permanent *Styles*. *Summits* blunt, rough with hair.

S. VESS. *Capsule* roundish, with three beaks and three cells, opening elastically in three directions.

SEEDS two, oblong, gibbous on one side, flat on the other.

TETRAGYNIA.

ILEX. (HOLLY. E.) *Tourn.* 371; *Aquifolium*.

CAL. *Cup* four-toothed, very small, permanent.

BLOSS. one petal, with four divisions, wheel-shaped. *Segments* roundish, concave, expanding, rather large, adhering by the claws.

STAM. *Filaments* four, awl-shaped, shorter than the blossom. *Anthers* small (two-lobed. E.)

PIST. *Germen* roundish. *Styles* none. *Summits* four, blunt.

S. VESS. *Berry* globular, with four cells.

SEEDS solitary, hard as bone, oblong, blunt, angular on the inside, gibbous externally.

Obs. Great variations take place in the flowers of *I. aquifolium*; sometimes the stamens and pistils are found on distinct plants: sometimes on the same plant, but in different flowers; sometimes again the flowers have five stamens; and frequently there are male and female, as well as hermaphrodite flowers, on the same, or on different plants.

POTAMOGETON. (POND-WEED. E.) *Tourn.* 103. *Gærtn.* 84.

CAL. none.

BLOSS. *Petals* four, nearly circular, blunt, concave, upright, furnished with a little claw, deciduous.

STAM. *Filaments* four, flat, blunt, very short. *Anthers* double, short.

PIST. *Germen* four, egg-shaped, but tapering to a point. *Style* none. *Summits* blunt.

S. VESS. none.

SEEDS four, roundish, taper pointed, tumid on one side, flattened on the other, and angular.

(Obs. *Filaments* often more than four. Sm. *Embryo* curved almost double. *Gærtn.* E.)

RUPPIA. (TASSEL-GRASS. E.) *Gærtn.* 84. (Sm. E.)

CAL. *Sheath* hardly any but what is formed by the base of the leaves. *Sheath Fruit-stalk* awl-shaped, undivided, straight, bending when the fruit ripens, beset with flowers which point in two opposite directions. *Cup* none.

BLOSS. none.

STAM. *Filaments* none. *Anthers* four, (sessile, irregularly quadrangular, depressed, bursting by a horizontal transverse fissure. E.)

PIST. *Germens* four or five, (turbinate, at length stalked. E.) *Style* none. *Summits* blunt.

S. VESS. none. The seeds are supported upon little foot-stalks, thread-shaped, and as long as the fruit.

SEEDS four or five, egg-shaped, oblique, terminated by a flat circular summit.

(**Obs.** Sir J. E. Smith considers the spadix in this instance to be a flower-stalk, as illustrated by the preceding genus. "Impregnation in *Ruppia*, says the same author, takes place within the sheath of the leaf, and the seeds are subsequently raised above the water to ripen; just the reverse of *Potamogeton*. E.)

SAGINA. (PEARL-WORT. E.) *Curt.* iii. 27. and 136, and 291.

CAL. *Cup* four-leaved. *Leaflets* egg-shaped, concave, greatly expanded, permanent.

BLOSS. *Petals* four, egg-shaped, blunt, expanding, shorter than the cup (sometimes wanting. E.)

STAM. *Filaments* four, hair-like. (*Anthers* of two roundish lobes. E.)

PIST. *Germens* somewhat globular. *Styles* four, awl-shaped, bent backward, downy. *Summits* simple.

S. VESS. *Capsule* egg-shaped, straight, with one cell and four valves.

SEEDS numerous, very small, (rough, each attached to the receptacle by its own stalk. E.)

Obs. *S. procumbens* has flowers with or without petals. *S. apetalá* has no petals; and in *S. erecta* the cup leaflets are spear-shaped, tapering to a point. *Reich.* *S. apetalá* is not uniformly destitute of petals, but when present they are very minute.

(**MOEN'CHIA.** **MOENCHIA.** *Ehrh. Hook. Scot.* 48. *Sagina*. *Linna*)

CAL. inferior, of four elliptic-lanceolate, concave, equal, converging, pointed, membranous-edged, permanent leaves.

BLOSS. *Petals* four, lanceolate, undivided, entire, upright, shorter than the calyx, shrivelling.

STAM. *Filaments* thread-shaped, ascending, shorter than the petals. *Anthers* of two roundish lobes.

PIST. *Germen* superior; ovate. *Styles* terminal, very short, spreading. *Summits* obtuse, downy.

S. VESS. *Capsule* the length of, the calyx; cylindrical, slightly ovate, of one cell and one valve, membranous, opening at the summit with eight, occasionally ten, equal, shallow, acute teeth.

SEEDS numerous, kidney-shaped, rough, attached each on its own stalk, to a central cylindrical receptacle, half the length of the capsule.

Obs. Herbaceous, smooth, erect, with the habit and fruit of a *Cerastium*, or *Holosticum*. Certainly misplaced in *Sagina*, as its habit, and the structure of the capsule evince. *Sm. Eng. Fl.* E.)

(RADIOLA. FLAX-SEED. E.) *Gmel. Syst. v. 2. 289. Fl. Br. 201. Hook. Scot. 69. Linum. Linn.*

CAL. inferior, of one leaf, in four principal segments, each of which is deeply and acutely three-cleft, permanent.

BLOSS. *Petals* four, obovate, undivided, spreading, the length of the calyx, and alternate with its principal segments.

STAM. *Filaments* four, awl-shaped, the length of the petals, without any intermediate imperfect filaments. *Antlers* roundish, of two lobes.

PIST. *Germen* superior, roundish, four-lobed. *Styles* four, terminal, capillary, very short, permanent. *Summits* capitate, obtuse.

S. VESS. *Capsule* roundish, somewhat pointed, with eight furrows, eight valves, with inflexed edges, cohering slightly in pairs, and eight cells.

SEEDS solitary, ovate, compressed, polished.

Obs. We know but one species, referred by Linnaeus to *Linum*, from which it differs in structure, as well as in number and habit. Sm. Eng. Fl. Ed.

CLASS V.

PENTANDRIA.

THE first division of the FIRST ORDER of this Class includes the plants with ROUGH LEAVES; (*Asperifoliae*;) which Linnaeus describes as *mucilaginous*, and *esulent*. Phil. Bot. 340. There being no seed-vessel the cup does not fall off, but remains after the blossom decays, and contains the seeds.

In the second division of this order those plants which bear berries, and have a blossom composed of one petal, are generally *poisonous*.

The third division of the SECOND ORDER, consists of plants whose flowers are disposed in UMBELS or RUNDLES. (*Umbellatae*, of Linnaeus; *Umbelliferae*, of Jussieu.) These are divided into such as have both a general and a partial INVOLUCRUM, such as have only a partial one, and such as have none at all; but as the Involucrum are not very constant, and in some species are apt to fall off, and as the blossoms, stamens, and pistils, are so much alike as to afford but little assistance in the determination of the genera and species, the student is desired to pay particular attention to the seeds, which furnish the most unequivocal generic characters, and often come powerfully in

aid of the specific characters. On this account, it is necessary to gather some specimens in which the seeds are nearly ripe, and others but just opening into flower.

(In preference to characters chiefly deduced either from the *inflorescence*, and *bractææ*,* (the umbels and involucrems,) parts too liable to vary even in the same species; or from the *seeds* alone; Sir James Smith has attempted to define the genera of the UMBELLATÆ on genuine Linnean principles. "By a full investigation of all the organs of fructification, and by distinguishing the tumid bases of the *styles* from the *floral receptacles*, things hitherto confounded, I have characterized," says that author, "the Umbelliferous plants like the rest, by the parts of the *flower* and *fruit* alone." In conformity with this suggestion the student will now find our arrangement of the genera of this strictly Natural Order. E.)

The Umbelliferous Plants in dry situations are aromatic and carminative; in moist ones, acrid, and sometimes *poisonous*.† The greatest virtues are contained in the seeds and roots. Many of them are eaten at our tables, as the roots of CARROT and PARSNIP, and the leaves of CELERY. The seeds of CORIANDER and CARAWAY are used in confectionary.

* (The learned President further remarks, "the absence or presence of these *bractææ*, and in some cases their shape, is resorted to by Linnæus for generic characters; to excuse which he denominates them *involucra* and *involucella*, as being supposed a kind of *calyx*, remote from the *flower*. But they are found in practice to lead to the formation of unnatural genera, and to be variable in the same species; affording an example of the treacherous nature of every thing belonging to the *inflorescence*, and not to the *fructification*, for generic discrimination." Eng. Fl. v. 2. p. 34. E.)

† ("What we commonly term poisons, are so denominated in consequence of the popular conception of their effect upon the system, but in reality, they do not essentially differ from medicaments. The very powerful operation which they produce, when under due regulation, is, perhaps in every instance, capable of being converted to some salutary purpose, and is only noxious, when carried to an excessive degree." Bostock's Physiology, v. 2. p. 477. We may be allowed here to reiterate that where the *stomach pump* cannot be quickly obtained, Acids may be given largely as the most efficacious antidote to vegetable poisons. E.)"

PENTANDRIA (Five Stamens.)

MONOGYNIA (One Pistil.)

<i>Myosotis.</i>	<i>Lysimachia.</i>	<i>Atropa.</i>
<i>Lithospermum.</i>	<i>Anagallis.</i>	<i>Solanum.</i>
<i>Anchusa.</i>	<i>Azalea.</i>	<i>Erythraea.</i>
<i>Cynoglossum.</i>	<i>Convolvulus.</i>	<i>Rhamnus.</i>
<i>Pulmonaria.</i>	<i>Polemonium.</i>	<i>Euonymus.</i>
<i>Symphytum.</i>	<i>Campanula.</i>	<i>Viola.</i>
<i>Borago.</i>	<i>Phyteuma.</i>	<i>Impatiens.</i>
<i>Asperugo.</i>	<i>Lobelia.</i>	<i>Ribes.</i>
<i>Lycopsis.</i>	<i>Samolus.</i>	<i>Hedera.</i>
<i>Echium.</i>	<i>Joncica.</i>	<i>Illecebrum.</i>
<i>Primula.</i>	<i>Jasione.</i>	<i>Glauz.</i>
<i>Cyclamen.</i>	<i>Verbascum.</i>	<i>Thesium.</i>
<i>Menyanthes.</i>	<i>Datura.</i>	<i>Vinca.</i>
<i>Hottonia.</i>	<i>Hyoscyamus.</i>	

DIGYNIA (Two Pistils.)

<i>Herniaria.</i>	<i>Torilis.</i>	<i>Cicuta.</i>
<i>Chenopodium.</i>	<i>Daucus.</i>	<i>Aethusa.</i>
<i>Atriplex.</i>	<i>Bunium.</i>	<i>Coriandrum.</i>
<i>Humulus.</i>	<i>Conium.</i>	<i>Anthriscus.</i>
<i>Beta.</i>	<i>Selinum.</i>	<i>Myrrhis.</i>
<i>Salsola.</i>	<i>Athamanta.</i>	<i>Scandix.</i>
<i>Ulmus.</i>	<i>Peucedanum.</i>	<i>Chærophyllyum.</i>
<i>Swertia.</i>	<i>Cnidium.</i>	<i>Imperatoria.</i>
<i>Centiana.</i>	<i>Crithmum.</i>	<i>Pastinaca.</i>
<i>Xanthium.</i>	<i>Heracleum.</i>	<i>Smyrnum.</i>
<i>Eryngium.</i>	<i>Ligusticum.</i>	<i>Meum.</i>
<i>Hydrocotyle.</i>	<i>Angelica.</i>	<i>Carum.</i>
<i>Sanicula.</i>	<i>Sium.</i>	<i>Pimpinella.</i>
<i>Bupleurum.</i>	<i>Sison.</i>	<i>Apium.</i>
<i>Tordylium.</i>	<i>Oenanthe.</i>	<i>Ægopodium.</i>
<i>Caucalis.</i>		

TRIGYNIA (Three Pistils.)

<i>Viburnum.</i>	<i>Staphylea.</i>	<i>Corrigiola.</i>
<i>Sambucus.</i>	<i>Tamarix.</i>	

TETRAGYNIA (Four Pistils.)

Parnassia.

PENTAGYNIA (Five Pistils.)

<i>Statice.</i>	<i>Linum.</i>	<i>Sibbaldia.</i>
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HEXAGYNIA (Six Pistils.)

Drosera.

POLYGYNIA (Many Pistils.)

Myosurus.

PENTANDRIA. MONOGYNIA.

MYOSOTIS. (SCORPION-GRASS. E.) *Gærtn.* 68.

CAL. *Cup* with five shallow clefts, oblong, upright, acute, permanent.
BLOSS. one petal, salver-shaped. *Tube* cylindrical, short. *Border* flat, with five shallow clefts. *Segments* blunt, notched at the end. *Mouth* closed with five convex prominent, approaching valves.

STAM. *Filaments* five, very short, in the neck of the tube. *Anthers* very small, covered by the valves.

PIST. *Germens* four. *Style* thread-shaped, as long as the tube of the blossom. *Summit* blunt.

S. VESS. none. The *Cup* enlarged and upright contains the seeds within it.

SEEDS four, egg-shaped, tapering to a point, smooth.

OBS. In some species the seeds are smooth, in others set with hooked prickles.

LITHOSPERMUM. (GROMWELL. E.) *Tourn.* 55. *Gærtn.* 67.

CAL. *Cup* with five divisions, oblong, straight, acute, permanent. *Segments* awl-shaped, keeled.

BLOSS. one petal, funnel-shaped, as long as the calyx. *Tube* cylindrical, *Border* with five shallow clefts, blunt, upright. *Mouth* open, naked.

STAM. *Filaments* five, very short, (inserted into some part of the tube. E.) *Anthers* oblong, concealed within the mouth of the blossom.

PIST. *Germens* four, (inserted into the base of the calyx. E.) *Style* thread-shaped, as long as the tube of the blossom. *Summit* blunt, cloven.

S. VESS. none. The seeds are contained in the bottom of the open cup, which is longer than the seeds.

SEEDS four, egg-shaped, tapering, hard, smooth, (sometimes wrinkled. Sm. E.)

ANCHUSA. (ALKANET. E.) *Tourn.* 53. Buglossum. *Gærtn.* 67.

CAL. *Cup* with five divisions, oblong, cylindrical, acute, permanent.

BLOSS. one petal, funnel-shaped. *Tube* cylindrical, as long as the cup. *Border* with five shallow clefts, blunt, a little expanding. *Mouth* closed by five convex, prominent, (vaulted, converging, hairy, valves. E.)

STAM. *Filaments* five, very short, in the mouth of the blossom. *Anthers* oblong, fixed sideways, (concealed by the valves.)

PIST. *Germens* four. *Style* thread-shaped, as long as the stamens. *Summit* blunt, notched at the end.

S. VESS. none. The *Cup* growing larger and upright incloses the

SEEDS four, rather long, blunt, (wrinkled, each hollowed out at the base. E.)

OBS. When the blossom is fully expanded it is nearly salver-shaped.

CYNOGLOS'SUM. (HOUND'S-TONGUE. E.) *Tourn.* 57. and 58. *Omphalodes.* *Gærtn.* 67. (Sm. E.)

CAL. Cup with five divisions, oblong, acute, permanent.

BLOSS. one petal, funnel-shaped, as long as the cup. Tube cylindrical, shorter than the border. Border with five shallow, blunt clefts. Mouth closed by five convex, prominent, approaching valves.

STAM. Filaments five, very short, fixed to the mouth of the blossom. Anthers roundish, naked.

PIST. Germens four. Style awl-shaped, as long as the stamens, permanent. Summit notched at the end.

S. VESS. none, but the seed-coats of the four seeds, depressed, roundish, outwardly more blunt, flattish upon the outer side; (imperforate at the base, more or less rough with hooked prickles, sometimes bordered, all attached horizontally to a central columnar Receptacle, formed of the hardened, permanent, angular style. E.)

OBS. The essence of this genus consists in the four seed-coats fixed to the style, each containing a single seed. Linn. (Seeds a kind of bur. Smith. E.)

PULMONARIA. (LUNGWORT. E.) *Tourn.* 55.

CAL. Cup one leaf, with five teeth, a five-sided prism, permanent.

BLOSS. one petal, funnel-shaped. Tube cylindrical, as long as the cup. Border with five shallow clefts, blunt, upright but expanding. Mouth open, naked.

STAM. Filaments five, very short, in the mouth of the tube. Anthers (oval, converging. E.)

PIST. Germens four, (roundish, downy. E.) Style thread-shaped, shorter than the cup. Summit blunt, notched at the end, small.

S. VESS. none. The Calyx unchanged contains the seeds in its base.

SEEDS four, roundish, blunt, (polished, hairy. E.)

SYMPHYTUM. (COMFREY. E.) *Tourn.* 56. *Gærtn.* 67.

CAL. Cup with five divisions, and five angles, upright, acute, permanent

BLOSS. one petal, bell-shaped. Tube very short. Border tubular, distended, thicker than the tube. Rim with five blunt reflexed teeth. (Mouth of the Tube closed with five valves, spear-shaped, toothed, or fringed at the edges, shorter than the border, converging so as to form a cone. E.)

STAM. Filaments five, awl-shaped, alternating with the valves, in the mouth of the tube. Anthers upright, acute, (concealed by the valves. E.)

PIST. Germens four. Style thread-shaped, as long as the blossom. Summit simple.

S. VESS. none.

SEEDS four, tapering, (tumid, converging at the points, and attached to the base of the enlarged cup. E.)

BORA'GO. (BORAGE. E.) *Tourn. Gartn.* 67. (Sm. E.)

CAL. Cup with five divisions, permanent.

BLOSS. one petal, wheel-shaped, as long as the cup. Tube shorter than the cup. Border with five divisions, wheel-shaped, flat, (or twisted. E.) Mouth crowned with five prominencies, which are blunt and notched at the end: (sometimes with awl-shaped ones, or with both, in which case the latter bear the stamens at the inner side. E.)

STAM. Filaments five, awl-shaped, converging. Anthers (arrow-shaped. E.) oblong, approaching, fixed to the inner side, and about the middle of the filament.

PIST. Germens four. Styles thread-shaped, longer than the anthers. Summit simple.

S. VESS. none. The cup enlarges, and becomes inflated.

SEEDS four, roundish, wrinkled, keeled outwardly towards the point, globular at the base, lying lengthwise in a hollow of the receptacle.

Obs. The shape of the segments of the cup, and the size of the tube of the blossom, are apt to vary. Linn.

ASPERU'GO. (MADWORT. E.) *Tourn.* 54. (Sm. E.)

CAL. Cup one leaf, permanent, with five upright unequal segments.

BLOSS. one petal, funnel-shaped. Tube cylindrical, very short. Border with five shallow clefts, blunt, small. Mouth closed by five convex, projecting, approaching valves.

STAM. Filaments five, very short, fixed in the mouth of the tube. Anthers rather oblong, covered, (of two lobes. E.)

PIST. Germens four, compressed. Style thread-shaped, short. Summit blunt,

S. VESS. none. The Cup much enlarged, upright, compressed, the sides flat and parallel, indented, (forming two veiny lobes. E.)

SEEDS four, oblong, compressed, (tuberculated, attached in distant pairs to a central column, formed of the lower part of the style. E.)

LYCOP'SIS. (BUGLOSS. E.) *Gartn.* 67.

CAL. Cup with five divisions, permanent. Segments oblong, acute, open.

BLOSS. one petal, funnel-shaped. Tube cylindrical, curved. Border with five shallow clefts, blunt. Mouth closed by five prominent, (hairy, E.) convex, approaching valves.

STAM. Filaments five, very small, fixed to the base of the tube. Anthers small, covered by the valves, (incumbent. E.)

PIST. Germens four. Style thread-shaped, as long as the stamens. Summit blunt, cloven.

S. Vess. none. *Cup* much enlarged, bladder-shaped (having attached to its base.

SEEDS four, rather long,) (angular, with a bordered scar. E.)

Obs. The Essential Character consists in the curvature of the tube of the blossom (which appears to be invariable: nevertheless, Dr. Lehman has comprehended the genus in *Anchusa*, but has not been followed by the most eminent British botanists. E.)

E'CHIUM. (VIPER-GRASS. E.) *Tourn.* 54. Sm. E.)

CAL. *Cup* with five divisions, permanent. *Segments* awl-shaped, upright.

BLOSS. one petal, bell-shaped. *Tube* very short. *Border* gradually widening, with five clefts, blunt, upright. *Segments* generally unequal, the two upper being the longest; the lower smaller, acute, reflexed. *Mouth* open.

STAM. *Filaments* five, as long as the blossom, (or longer. E.) awl-shaped, declining, unequal. *Anthers* oblong, fixed sidewise.

PIST. *Germens* four. *Style* thread-shaped, as long as the stamens, (often hairy. E.) *Summit* (bipartite. E.)

S. Vess. none. The cup becoming more rigid, contains the seeds.

SEEDS four, roundish, obliquely pointed, (wrinkled or rough. E.)

Obs. In *Echium italicum* the blossom is nearly regular. Linn:

PRIMULA. (PRIMROSE. COWSLIP. E.) *Tourn.* 47. *Gærtn.* 50.

CAL. *Involucrum* small, many leaved, including several flowers. *Cup* one leaf, tubular, acute, upright, permanent, with five angles, and five teeth.

BLOSS. one petal. *Tube* cylindrical, as long as the cup, terminated by a short hemispherical neck. *Border* expanding, with five shallow clefts. *Segments* inversely heart-shaped, notched at the end, blunt. *Mouth* open.

STAM. *Filaments* five, very short, within the neck of the blossom. *Anthers* upright, approaching, tapering to a point, within the tube.

PIST. *Germen* globular. *Style* thread-shaped, as long as the cup. *Summit* globular.

S. Vess. *Capsule* cylindrical, nearly as long as the cup which invests it, of one cell, opening at the top with ten teeth.

SEEDS numerous, roundish. *Receptacle* oblong, egg-shaped, unconnected.

CYCLAMEN. (CYCLAMEN. SOW-BREAD. E.) *Tourn.* 68.

CAL. *Cup* with five shallow clefts, roundish, permanent. *Segments* egg-shaped.

BLOSS. one petal, (wheel-shaped. E.) *Tube* nearly globular, twice the size of the cup, small, deflexed. *Border* reflexed upwards, very large, with five divisions. *Segments* spear-shaped. *Neck* protruding.

STAM. *Filaments* five, very short, in the tube of the blossom. *Anthers* straight, acute, approaching, in the neck of the blossom.

PIST. *Germen* roundish. *Style* thread-shaped, straight, longer than the stamens. *Summit* acute.

S. VESS. (*Capsule*. E.) *Berry* globular, of one cell, opening at the top in five directions, covered by a shell like a capsule (pulpy within. E.)

SEEDS many, somewhat egg-shaped, but angular. *Receptacle* egg-shaped, unconnected.

MENYANTHES. (BUCKBEAN. E.) *Tourn.* 15 and 67, *Nymphoides.* *Gartn.* 14. (Sm. E.)

CAL. *Cup* one leaf, with five divisions (deep, E.) upright, permanent.

BLOSS. one petal, funnel-shaped. *Tube* short, cylindrical at bottom, but somewhat dilated, upwards. *Border* cloven more than half way down into five segments. *Segments* blunt, reflexed and expanding, remarkably bearded.

STAM. *Filaments* five; awl-shaped, short, (attached to the tube, alternate with the segments of the limb. E.) *Anthers* acute, upright, cloven at the base.

PIST. *Germen* conical. *Style* cylindrical, nearly as long as the blossom. *Summits* cloven, compressed.

S. VESS. *Capsule* egg-shaped, of one cell, (and two more or less separable valves, E.) bound round at the lower part by the cup.

SEEDS many, egg-shaped, minute, (attached to the margin of each valve. E.)

Obs. In *M. nymphoides*, the petals are fringed at the edge, but not hairy on their upper surface. Linn.

HOTTONIA. (FEATHERFOIL. WATER-VIOLET. E.) *Curt.* i. 4. (Sm. E.)

CAL. *Cup* one leaf, with five (deep, E.) divisions. *Segments* strap-shaped, upright, but expanding.

BLOSS. one petal, salver-shaped. *Tube* as long as the cup, (open, E.) *Border* with five (deep, E.) clefts, flat. *Segments* egg-oblong, notched at the end.

STAM. *Filaments* five, awl-shaped, short, upright, situated on the margin of the tube, and opposite to the segments of the blossom. *Anthers* oblong, (incumbent. E.)

PIST. *Germen* globular, tapering to a point. *Style* thread-shaped, short. *Summit* globular.

S. VESS. *Capsule* globular, tapering to a point, of one cell, (with valves E.) standing upon the cup.

SEEDS many, roundish, covering the *Receptacle*, which is globular, large, unconnected. E.)

Obs. In *Hottonia palustris* the flowers have sometimes six, seven, or eight stamens, and then the segments of the cup and blossom correspond in number.

LYSIMA'CHIA. (LOOSESTRIFF. E.) *Tourn.* 59. *Gærtn.* 50.

- CAL.** *Cup* with five divisions, acute, nearly upright, permanent.
BLOSS. one petal, wheel-shaped. *Tube* none. *Border* with five divisions, flat. *Segments* egg-oblong.
STAM. *Filaments* five, awl-shaped, opposite the segments of the blossom. *Anthers* tapering, (notched at each end. E.)
PIST. *Germen* roundish. *Style* thread-shaped, as long as the stamens. *Summit* blunt.
S. VESS. *Capsule* globular, sharp-pointed, of one cell and ten valves, (sometimes cohering in pairs. Sm. E.)
SEEDS several, angular. *Receptacle* very large, globular, (pitted, unconnected. E.)

Obs. In some species the stamens are united at the base. Schreb. In *L. thysiflora* the segments of the cup and the blossom vary from five to eight, as does likewise the number of stamens.

ANAGALLIS. (PIMPERNEL. E.) *Tourn.* 59. *Gærtn.* 50.

- CAL.** *Cup* with five divisions, acute, permanent. *Segments* keeled.
BLOSS. one petal, wheel-shaped. *Tube* none. *Border* with five divisions, flat. *Segments* egg-shaped, but rounded, connected by the claws.
STAM. *Filaments* five, upright, hairy towards the middle and base, shorter than the blossom. *Anthers* (roundish, heart-shaped. E.)
PIST. *Germen* globular. *Style* thread-shaped, rather leaning. *Summit* capitate.
S. VESS. *Capsule* globular, of one cell, cut round, (splitting horizontally. E.)
SEEDS several, angular. *Receptacle* very large, globular, (unconnected, pitted. E.)

AZALEA. (ROSEBAY. E.) *Gærtn.* 63. (Sm. E.)

- CAL.** *Cup* with five divisions, acute, upright, small, coloured, permanent.
BLOSS. one petal, bell-shaped, with five shallow clefts. *Segments* with the edges bent inwards.
STAM. *Filaments* five, thread-shaped, growing on the receptacle, unconnected. *Anthers* (roundish, opening by two terminal pores. E.)
PIST. *Germen* roundish, (with five longitudinal furrows. E.) *Style* thread-shaped, as long as the blossom, permanent. *Summit* blunt, (umbilicated. E.)
S. VESS. *Capsule* roundish, (distinctly furrowed, crowned with the style, E.) with five cells and five valves. E.)
SEEDS many, roundish, dotted, &c.

Obs. The blossom in some species is funnel-shaped: in some the stamens are very long, and declining. Lim. (Cells of the capsule sometimes only two, three, or four. E.)

CONVOLVULUS. (BINDWEED. E.) *Tourn.* 17.

CAL. *Cup* with five divisions, approaching, egg-shaped, blunt, small, permanent.

BLOSS. one petal, bell-shaped, expanding, large, plaited. *Border* slightly five-lobed.

STAM. *Filaments* five, awl-shaped, half the length of the blossom, (converging. E.) *Anthers* (arrow-shaped. E.) compressed.

PIST. *Germen* roundish. *Style* thread-shaped, as long as the stamens. *Summits* two, oblong, rather broad.

S. VESS. *Capsule* invested with the cup, roundish, of one cell, with one, two, or three valves.

SEEDS two, roundish.

(**Obs.** The blossom has generally ten notches, but sometimes only five; and in some species it is funnel-shaped. *Linu.* The number and division of the stigmas, is as liable to variation as the number of stamens. It is only their form on which we can rely for constant characters. The fruit varies as much in the number of cells, as in that of the seeds in each cell: sometimes a cell vanishes completely, when the ovulum contained in it is left unimpregnated; and in cases where a cell contains several ovula, not unfrequently only one is impregnated, while the others are abortive. It is only the nature of the integuments of the seeds which is not liable to vary. *Roth*, in *Annals of Botany*. E.)

POLEMONIUM. (JACOB'S LADDER. E.) *Tourn.* 61. *Gærtn.* 62. (Sm. E.)

CAL. *Cup* beneath, of one glass-shaped leaf, permanent, acute, with five shallow clefts.

BLOSS. one petal, wheel-shaped. *Tube* shorter than the cup, (closed at the top by five downy valves. E.) *Border* with five divisions, large, flat. *Segments* roundish, blunt.

STAM. *Filaments* five, (awl-shaped. E.) inclining, shorter than the blossom, (inserted into the tube between the valves. E.) *Anthers* roundish, fixed sidewise.

PIST. *Germen* egg-shaped, acute, superior. *Style* thread-shaped, as long as the blossom. *Summit* with three clefts, rolled back.

S. VESS. *Capsule* covered, egg-shaped, but with three angles, three cells, and three valves, opening at the top. *Partitions* opposite to the valves.

SEEDS several, irregular, rather acute, (attached to the innermost angle of each cell. E.)

(**Obs.** In *P. cæruleum*, though the capsule is seamed as if composed of three valves, they only open at the top.)

CAMPANULA. (BELL-FLOWER. E.) *Tourn.* 37. *Gærtn.* 31. (Sm. E.)

CAL. *Cup* with five divisions, acute, upright but expanding, superior, (in some with intermediate, reflexed, tumid lobes. E.)

BLOSS. one petal, bell-shaped, with five shallow clefts, impervious at the base, shrivelling. *Segments* broad, acute, spreading.

Nectary at the bottom of the blossom, composed of five valves, acute, approaching, covering the receptacle.

STAM. *Filaments* five, hair-like, very short, growing upon the points of the valves of the nectary. *Anthers* compressed, longer than the filaments, (linear, spreading. E.)

PIST. *Germen* beneath, angular. *Style* thread-shaped, longer than the stamens, (downy. E.) *Summit* thickish, oblong, with three divisions, which are rolled back.

S. VESS. *Capsule* roundish, angular, of three or five cells, and letting out the seed at as many lateral orifices.

SEEDS numerous, small, (polished. E.) fixed to a columnar receptacle.

OBS. The figure of the seed-vessel is uncertain. In *C. trachelium* it is three-celled, woolly and rough; in *C. rapunculus* it is three-celled, egg-shaped, and smooth; in *C. hybrida* it is three-celled, columnar, and prism-shaped. Linn. (The style, partly very hairy, receives the pollen before it reaches the stigma, and retains it long. E.)

PHYTEUMA. (RAMPION. E.) *Tourn.* 38, *Rapunculus.* *Gartn.* 30.

CAL. *Cup* one leaf, with five divisions, acute, not quite upright, but expanding, superior.

BLOSS. one petal, wheel-shaped, expanding, with five divisions. *Segments* strap-shaped, acute, recurved.

STAM. *Filaments* five, shorter than the blossom, (dilated at the base E.) *Anthers* oblong.

PIST. *Germen* beneath, (angular. E.) *Style* thread-shaped, as long as the blossom, recurved. *Summit* with two or three clefts, oblong, rolled back.

S. VESS. *Capsule* roundish, two or three celled, opening at each rib by a lateral orifice.

SEEDS several, small, roundish.

LOBELIA. (CARDINAL-FLOWER. E.) *Tourn.* 51, *Rapuntium.* *Gartn.* 25.

CAL. *Cup* one leaf, with five clefts, very small, embracing the germen, shrivelling. *Little Teeth* nearly equal, the two upper ones pointing more upwards.

BLOSS. *Petal* one, irregular. *Tube* cylindrical, longer than the cup, above divided lengthwise. *Border* with five divisions. *Segments* spear-shaped, the two *Upper Ones* smaller, more reflexed, more deeply divided, forming the upper lip. The three *Lower Ones* generally larger, and more expanding, forming the under lip.

STAM. *Filaments* five, awl-shaped, as long as the tube of the blossom, united at the top. *Anthers* connected so as to form an oblong cylinder, opening at the base in five different directions.

PIST. *Germen* beneath, tapering to a point. *Style* cylindrical, as long as the stamens. (*Summit* capitate, hairy. E.)

S. VESS. *Capsule* egg-shaped; angular, E.) with two or three cells, and two or three valves, opening at the top, encompassed by the cup. *Partitions* opposite the valves.

SEEDS many, very small. *Receptacle* conical.

SAM'OLUS. (WATER PIMPERNEL. E.) *Tourn.* 60. *Gærtn.* 30. (Sm. E.)

CAL. *Cup* with five divisions, superior, blunt at the base, permanent. *Segments* upright, (deep, triangular. E.)

BLOSS. one petal, salver-shaped. *Tube* open, very short, as long as the cup. *Border* flat, blunt, with five divisions, (and five small alternating scales. E.)

STAM. *Filaments* five, short, (awl-shaped. E.) protected by the scales of the blossom. *Anthers* approaching, (roundish, two-lobed. E.)

PIST. *Germen* (half inferior. E.) *Style* thread-shaped, as long as the stamens. *Summit* capitate.

S. VESS. *Capsule* egg-shaped, of one cell, and five valves, invested by the cup.

SEEDS many, small, (angular, minutely dotted. E.) *Receptacle* large, globular, (unconnected. E.)

LONICERA. (HONEYSUCKLE. WOODBINE. E.) *Tourn.* 378, *Periclymenum.* *Gærtn.* 27. (Sm. E.)

CAL. *Cup* superior, with five divisions, small.

BLOSS. one petal, tubular. *Tube* oblong, gibbous. *Border* with five divisions. *Segments* rolled back, one segment more deeply separated than the others.

STAM. *Filaments* five, awl-shaped, nearly as long as the blossom, (inserted into the upper part of the tube. E.) *Anthers* oblong.

PIST. *Germen* beneath, roundish. *Style* thread-shaped, as long as the blossom, (reclining. E.) *Summit* a blunt knob.

S. VESS. *Berry* dimpled, (of one or more cells, sometimes double and confluent. E.)

SEEDS roundish, compressed.

Obs. In *L. Periclymenum* the segments of the blossom are cut nearly to an equal depth, and the berries are distinct. *Linn.*

JASIONE. (SHEEP'S-BIT. E.) *Gærtn.* 30.

CAL. *Common Cup* of ten leaves, permanent. *Leaflets* alternate, the inner narrower, inclosing several flowers, upon very short fruit-stalks.

Proper Cup with five clefts, superior, permanent.

BLOSS. *Individuals* of one petal, (wheel-shaped. E.) regular, deeply divided into five parts. *Segments* spear-shaped, (nearly upright. E.)

STAM. *Filaments* five, awl-shaped, short. *Anthers* five, oblong, united at the base.

PIST. *Germen* roundish, beneath. *Style* thread-shaped, the length of the blossom. *Summit* cloven.

S. VESS. *Capsule* roundish, (somewhat bladder-like, E.) of five angles and two cells, crowned with the proper cup, opening with a circular orifice at the top. *Partition* divided down the middle, (perpendicular. E.)

SEEDS many, somewhat egg-shaped, (minute. E.) *Receptacle* nearly globular, unconnected, on a little foot-stalk at the base of the capsule.

OBS. The central florets are frequently barren, in which case the summit is club-shaped and undivided. Linn.

VERBAS'CUM. (MULLEIN. E.) *Tourn.* 61. *Gærtn.* 55.
(Sm. E.)

CAL. *Cup* one leaf, with five divisions, small, permanent. *Segments* upright, acute.

BLOSS. one petal, wheel-shaped, somewhat unequal. *Tube* cylindrical, very short. *Border* with five divisions, expanding. *Segments* egg-shaped, blunt.

STAM. *Filaments* five, awl-shaped, shorter than the blossom, (unequal, distant, declining, woolly. E.) *Anthems* compressed, upright, (more or less kidney-shaped, bursting along the upper edge, imperfectly two-celled. E.)

PIST. *Germen* roundish. *Style* thread-shaped, declining, (slightly swelling upwards. E.) as long as the stamens. *Summit* rather thick and blunt.

S. VESS. *Capsule* roundish, with two cells and two valves opening at the top. *Receptacle* the shape of half an egg, (connected at each side, in an early state, with the valves. E.)

SEEDS numerous, angular, (dotted. E.)

OBS. In most species the stamens are declining, unequal, and the lower part of the filaments clothed with soft, coloured hairs. Linn.

DATURA. (THORN-APPLE. E.) *Tourn.* 43 and 44, *Stramonium.* (Sm. E.)

CAL. *Cup* one leaf, oblong, tubular, distended, with five angles and five teeth, separating horizontally near the base, the remaining part irregular, permanent.

BLOSS. one petal, funnel-shaped. *Tube* cylindrical, generally longer than the cup. *Border* upright but expanding, almost entire, with five angles, five tapering teeth, and five plaits.

STAM. *Filaments* five, awl-shaped, as long as the (tube to which they are united for about half their length. E.) *Anthems* (heart-oblong, E.) blunt, compressed.

PIST. *Germen* egg-shaped, (four-celled. E.) *Style* thread-shaped, straight. *Summit* thick, blunt, composed of two flat plates.

S. VESS. *Capsule* nearly egg-shaped, with two cells and four valves, standing upon the remains of the cup, (often prickly. E.) *Recepta-*

cles large, convex, dotted, attached to the partition, (two to each cell. E.)

SEEDS numerous, kidney-shaped, (dotted. E.)

Obs. The smoothness or thorny state of the capsules is subject to vary. Linn.

HYOSCYAMUS. (HENBANE. E.) *Tourn.* 42. *Gærtn.* 76.

CAL. *Cup* one leaf, tubular, distended in the lower part. *Rim* with five clefts, acute, permanent.

BLOSS. one petal, funnel-shaped, (irregular. E.) *Tube* cylindrical, short. *Border* upright, but expanding, with five shallow clefts. *Segments* blunt, one broader than the rest.

STAM. *Filaments* five, awl-shaped, inclining. *Anthers* (heart-shaped. E.)

PIST. *Germen* roundish. *Style* thread-shaped, as long as the stamens, (reclining. E.) *Summit* a knob.

S. VESS. *Capsule* egg-shaped, blunt, marked with a groove upon each side, of two cells formed by two capsules closely pressed together, cut round, and with a lid opening horizontally. *Receptacle* half egg-shaped, attached to the partition.

SEEDS numerous, unequal, (curved, dotted. E.)

ATROPA. (DWALE. E.) *Tourn.* 13, *Belladonna.* (Sm. E.)

CAL. *Cup* one leaf, permanent, with five divisions, gibbous. *Segments* acute.

BLOSS. one petal, bell-shaped. *Tube* very short. *Border* distended, egg-shaped, longer than the cup. *Mouth* small, with five clefts, open. *Segments* nearly equal.

STAM. *Filaments* five, awl-shaped, fixed to the base of, and as long as the blossom, approaching at the base, but bowed outwards, and diverging towards the top. *Anthers* (deflexed, heart-shaped, four-lobed, tumid. E.)

PIST. *Germen* half-egg-shaped, (with a nectariferous gland underneath. E.) *Style* thread-shaped, reclining, as long as the stamens. *Summit* capitate, transversely oblong, ascending.

S. VESS. *Berry* of two cells, globular, sessile upon the cup, which enlarges. *Receptacle* fleshy, kidney-shaped, convex on both sides, (attached to the transverse partition. E.)

SEEDS numerous, kidney-shaped.

SOLA'NUM. (NIGHTSHADE. E.) *Tourn.* 62. (Sm. E.)

CAL. *Cup* one leaf, with five shallow clefts, upright, acute, permanent.

BLOSS. one petal, wheel-shaped. *Tube* very short. *Border* large, plaited, with five clefts, turned back and flat.

STAM. *Filaments* five, awl-shaped, short. *Anthers* longer, oblong, approaching a little united, with two open pores at the end.

PIST. *Germen* roundish. *Style* thread-shaped, longer than the stamens, (deciduous. F.) *Summit* blunt.

S. VESS. *Berry* roundish, glossy, with a hollow dot at the end, and two (or more, E.) cells. *Receptacle* convex on both sides, fleshy. SEEDS several, roundish, dispersed among the pulp, (compressed, sometimes minutely dotted. E.)

ERYTHRÆA. CENTAURY. *Br. Pr.* 451. *Hook. Scot.* 62. *Chironia, Willd. Wuth. Gentiana. Linn.*

CAL. *Cup* inferior, of one leaf, in five deep, erect, acute, awl-shaped segments, sometimes united below by a membranous border, permanent.

BLOSS. of one petal, salver-shaped. *Tube* nearly cylindrical, slender, longer than the calyx. *Limb* in five deep, ovate, or lanceolate, equal, spreading segments, about half the length of the tube, withering.

STAM. *Filaments* thread-shaped, equal, inserted into the tube, alternate with the segments of the limb, and much shorter. *Anthers* oblong, incumbent, twisting spirally as the pollen ripens.

PIST. *Germen* elliptic, oblong, or nearly linear, compressed. *Style* terminal, cylindrical, prominent, on a level with the stamens, straight, and generally erect. *Summits* two, roundish, spreading till after impregnation.

S. VESS. *Capsule* elliptic-oblong, nearly linear, acute at each end, compressed, imperfectly two-celled, of two valves with inflexed margins.

SEEDS numerous, roundish, in four rows, placed alternately on the inflexed margins of the valves.

OBS. Well distinguished from *Chironia*, particularly by the long tube and short limb; straight style; two stigmas; and almost linear capsule, destitute of a separate partition, or receptacle. The name *Erythraea*, alluding to the red colour of most of the flowers, is justly retained for its priority of date. *Sm. Eng. Fl. E.*

RHAMNUS. (BUCKTHORN. E.) *Tourn.* 366, and 383, *Frangula. Gartn.* 106. (*Sh. E.*)

CAL. *Cup* none, except the blossom be considered as such.

BLOSS. one petal, funnel-shaped, closed at the base, rough outwardly, but coloured within. *Tube* turban-shaped, cylindrical. *Border* expanding, (divided into five, sometimes only four, acute segments. E.) *Scales* five, very small, one at the base of each division of the blossom, approaching inwards.

STAM. *Filaments* as many as the segments of the blossom, awl-shaped, growing upon the blossom under the scales. *Anthers* small, (two-lobed. E.)

PIST. *Germen* roundish, (seated on a glandular disk. E.) *Style* thread-shaped, as long as the stamens. *Summit* blunt, divided in fewer segments than the blossom.

S. VESS. *Berry* roundish, naked, divided into fewer cells than the blossom has segments.

SEEDS solitary, roundish, gibbous on one side, compressed on the other.

Obs. *R. catharticus* has a four-cleft summit and blossom, and bears a four-seeded berry; it also bears male and female flowers on separate plants. *R. frangula* has a five-cleft blossom, a four-seeded berry, and a summit notched at the end.

EUONYMUS. (SPINDLE-TREE. E.) *Tourn.* 388. *Gärtn.* 113.

CAL. *Cup* one leaf, with five divisions, flat. *Segments* roundish, concave.

BLOSS. *Petals* five, egg-shaped, flat, expanding, longer than the cup.

STAM. *Filaments* five, awl-shaped, upright, shorter than the blossom, standing upon the germen, as a receptacle. *Anthers* double.

PIST. *Germen* (depressed, pointed. E.) *Style* short, simple. *Summit* blunt.

S. VESS. *Capsule* succulent, coloured, with five sides, five angles, five cells, and five (coriaceous, E.) valves.

SEED solitary, egg-shaped, inclosed in a berry-like seed-coat.

Obs. In some species four is the prevailing number in the parts of the flower and fruit, and in others there are no filaments except the tapering points of the germen. *Lin.*

VIOLA. (VIOLET. E.) *Tourn.* 236. (Sm. E.)

CAL. *Cup* five-leaved, short, permanent; *leaflets* egg-oblong; rather acute at the end, blunt at the base, inserted above the base, equal but variously disposed; two support the upper petal, two to the two lateral petals, and one supports the two lower petals.

BLOSS. *Petals* five, irregular, unequal, the *Upper* straight, facing downwards, broader and blunter than the rest, notched at the end, terminating at the base in a blunt horn-like *Nectary*, projecting between the leaves of the cup.

Lateral Petals two: opposite, blunt, straight.

Lower Petals two; larger, turned upward.

STAM. *Filaments* five, very small, the two near the uppermost petal furnished with little appendages which enter the nectary. *Anthers* generally united, blunt, (sometimes scarcely connected, each terminating in a membranous point. E.)

PIST. *Germen* roundish, superior. *Style* thread-shaped, projecting beyond the anthers. *Summit* oblique.

S. VESS. *Capsule* egg-shaped, three-edged, blunt, with one cell, (and three rigid, finally reflexed, valves. E.)

SEEDS many, egg-shaped, furnished with appendages, fixed to the valves, (polished. E.) *Receptacle* narrow, running like a line along each valve.

Obs. In some species the summit is a simple reflexed hook, in others a little concave knob, perforated at the end. (In all the European species the flower is reversed, or inverted. E.)

IMPATIENS. (BALSAM. E.) *Tourn.* 235, *Balsamina.*
Gærtn. 113.

CAL. *Cup* two leaves, very small. *Leaflets* circular, but tapering to a point, equal, placed at the sides of the blossom, coloured, deciduous.

BLOSS. *Petals* five, gaping, unequal.

Upper Petal circular, flat, upright, with three shallow segments, tapering to a point, forming the *Upper Lip*.

Lower Petals two; reflexed, large, dilated outwards, blunt, irregular, forming the *Lower Lip*.

Intermediate Petals two; opposite, from the base of the upper petal.

Nectary one leaf, like a hood, receiving the bottom of the flower, mouth oblique, rising outwards, the base terminating in a horn.

STAM. *Filaments* five, very short, narrower towards the base, bent inwards. *Anthers* five, united, but generally separate at the base.

PIST. *Germen* egg-shaped, but tapering to a point. *Style* none. *Summit* simple, shorter than the anthers.

S. VESS. *Capsule* of five cells, with five valves, which opening elastically, roll up into a spiral.

SEEDS many, roundish, attached to a central columnar receptacle.

OBS. In some species the intermediate petals are wanting; in others the nectary has no horn. Capsule in some species long, in others egg-shaped. (It is only when in a state approaching to decay that it appears to have but one cell. E.)

RIBES. (CURRANT. GOOSEBERRY. E.) *Tourn.* 409,
Grossularia. *Gærtn.* 28. (Sm. E.)

CAL. *Cup* one leaf, with five shallow clefts, distended, permanent. *Segments* oblong, concave, coloured, reflexed, (shrivelling. E.)

BLOSS. five petals, small, blunt, upright, arising from the edge of the cup.

STAM. *Filaments* five, awl-shaped, upright, standing on the edge of the cup, (opposite to each segment. E.) *Anthers* fixed sidewise, compressed, (with two distant lobes, E.) opening at the edges.

PIST. *Germen* beneath, roundish. *Style* cloven. *Summits* blunt.

S. VESS. *Berry* globular, of one cell, dimpled. *Receptacles* two; opposite, fixed to the sides, extending lengthwise, (juicy. E.)

SEEDS several, roundish, somewhat compressed, (or angular, each coated with mucilaginous pulp. E.)

OBS. In *R. alpinum* the male and female flowers are sometimes found on different plants. Leers. (Flowers greenish, clustered in the Currants; in most of the Gooseberries simply stalked. E.)

HE'DERA. (IVY. E.) *Tourn.* 384. *Gærtn.* 26,

CAL. *Involutrum* of the simple umbel very small, with many teeth.

Cup very small, with five teeth, binding round the germen.

BLOSS. *Petals* five, oblong, expanding, bent inwards at the points.

STAM. *Filaments* five, awl-shaped, upright, as long as the blossom. *Anthers* fixed sidewise, (incumbent, E.) cloven at the base.

PIST. *Germen* turban-shaped, bound round by the cup. *Style* simple, very short, (furrowed. E.) *Summit* undivided.

S. VESS. *Berry* globular, with five cells.

SEEDS five, large, gibbous on one side, angular on the other, covered with a seed-coat; (one in each cell. E.)

OBS. With us the berry has rarely more than four cells, and in general only two or three seeds attain perfection; but sometimes I have found it with five cells, and five perfect seeds.

ILLE'CEBRUM. (KNOT-GRASS. E.) *Tourn.* 288, *Paronychia*.

CAL. *Cup* five leaves and five angles, cartilaginous. *Leaflets* coloured, tapering, distant at the points, permanent.

BLOSS. none.

STAM. *Filaments* five, hair-like, within the cup, (sometimes alternating with as many strap-shaped scales. Gærtn. E.) *Anthers* simple, (of two cells. E.)

PIST. *Germen* egg-shaped, acute, ending in a short cloven style. *Summit* simple, blunt.

S. VESS. *Capsule* roundish, tapering at each end, with five valves and one cell, covered by the cup.

SEED solitary, very large, roundish, but pointed at each end.

OBS. The fruit varies in several species. Linn.

GLAU'X. (SEA-MILKWORT. E.) *Tourn.* 60.

CAL. *Cup* none, unless the blossom be considered as such.

BLOSS. *Petal* single, upright, with five divisions, bell-shaped, permanent. *Segments* blunt, rolled back.

STAM. *Filaments* five, awl-shaped, upright, as long as the blossom. *Anthers* roundish.

PIST. *Germen* egg-shaped. *Style* thread-shaped, as long as the stamens. *Summit* capitate.

S. VESS. *Capsule* globular, pointed, of one cell and five valves.

SEEDS five, roundish. *Receptacle* very large, globular, pitted where the seeds lie.

THE'SIUM. (BASTARD-TOADFLAX, E.) *Jacq. Austr.* 416. (Sm. E.)

CAL. *Cup* one leaf, permanent, turban-shaped, with five shallow clefts, (ultimately closed, coriaceous. E.) *Segments* half-spear-shaped, upright, blunt, (with intermediate notches. E.)

BLOSS. none, unless the cup from its being coloured within be considered as such.

STAM. *Filaments* five, awl-shaped, inserted in the centre of each at the base of the segment of the cup, shorter than the cup. *Anthers* roundish.

PIST. *Germen* beneath, at the bottom of the cup, (ribbed. E.) *Style* thread-shaped, as long as the stamens. *Summit* rather thick and blunt.

S. VESS. none. *Drupa* oblong, angular, dry, coriaceous; covered by the closing cup.

SEED (a *Nut.* E.) roundish.

OBS. *T. alpinum* has only four stamens in each flower. Linn. (A small tuft of hair is sometimes perceptible on the outside of each stamen. E.)

VIN'CA. (PERIWINKLE. E.) *Tourn.* 45.

CAL. *Cup* with five divisions, upright, acute, permanent.

BLOSS. one petal, salver-shaped. *Tube* longer than the cup, cylindrical in the lower part, wider above, marked with five grooves, and five angles at the mouth. *Border* with five divisions, horizontal. *Segments* connected with the top of the tube, broadest at the outward edge, and obliquely lopped.

STAM. *Filaments* five, very short, first bent inwards, and then backwards. *Anthers* membranous, blunt, upright, but bowed inwards, bearing the pollen at each lateral margin.

PIST. *Germen* two, roundish, with two globular glands contiguous to them. *Style* one, common to both germens, cylindrical, as long as the stamens. *Summit* a concave knob, sessile on a flat orbicular substance.

S. VESS. two, cylindrical, long, upright. *Follicles* tapering to a point, of one valve, opening lengthwise.

SEEDS numerous, oblong, cylindrical, furrowed, naked.

DIGYNIA.

HERNIA'RIA. (RUPTURE-WORT. E.) *Tourn.* 288.

CAL. *Cup* one leaf, with five divisions, acute, expanding, coloured within, permanent.

BLOSS. none.

STAM. *Filaments* five, awl-shaped, minute, within the segments of the cup. *Anthers* simple. There are five other barren filaments alternating with the segments of the cup.

PIST. *Germen* egg-shaped. *Style* very short. *Summits* two, tapering to a point, as long as the style.

S. VESS. *Capsule* small, invested with the cup, scarcely opening, (membranous, of one cell. E.)

SEED solitary, egg-shaped, but tapering to a point, polished.

CHENOPO'DIUM. (GOOSEFOOT. E.) *Tourn.* 288. *Gartn.* 75.

CAL. *Cup* with five divisions, concave, permanent. *Segments* egg-shaped, concave, membranous at the edges.

BLOSS. none.

STAM. *Filaments* five, awl-shaped, as long as the segments of the cup, and opposite to them. *Anthers* roundish, double.

PIST. *Germen* round and flat. *Style* short, deeply divided. *Summits* blunt.

S. VESS. none. The cup closing upon the seed, has five sides, and five compressed angles, deciduous.

SEED single, superior, (lenticular, enveloped in a thin, close, pellicle. E.)

Obs. In some species the style has three divisions.

A'TRIPLEX. (ORACHE. E.) *Tourn.* 286. *Gartn.* 75.

Hermaphrodite flowers.

CAL. *Cup* five leaves, concave, permanent. *Segments* egg-shaped, concave, membranous at the edge.

BLOSS. none.

STAM. *Filaments* five, awl-shaped, opposite to the leaves of the cup, and longer than them. *Anthers* roundish, double.

PIST. *Germen* globose. *Style* deeply divided, short. *Summits* reflexed.

S. VESS. none. The cup closing, with five sides and five angles, the angles compressed, deciduous.

SEED single, roundish, flattened and depressed.

Female flowers on the same plant.

CAL. *Cup* two leaves.* *Leaflets* flat, upright, egg-shaped, acute, large, compressed.

BLOSS. none.

PIST. *Germen* compressed. *Style* deeply divided. *Summits* reflexed, acute.

S. VESS. none. The valves of the cup, which are large and heart-shaped, inclose the seed between them.

SEED single, roundish, compressed.

Obs. Great affinity subsists between *Atriplex* and *Chenopodium*; the presence of female flowers in *Atriplex* is the only mark of distinction; for if *Chenopodium* had these flowers it would be *Atriplex*; and *Atriplex* without them would be *Chenopodium*. Linn.

HU'MULUS. (HOP. E.) *Tourn.* 309, *Lupulus.* *Gartn.* 75.

Male flowers.

CAL. *Cup* five leaves, oblong, concave, blunt.

BLOSS. none.

STAM. *Filaments* five, hair-like, very short. *Anthers* oblong.

Female flowers.

CAL. *General Involucrum* with four clefts, acute.

Partial Involucrum, leaves four, egg-shaped, inclosing eight florets, each of which is furnished with a

Cup of one leaf, egg-shaped, very large, flat on the outer side, converging at the base.

BLOSS. none.

PIST. *Germen* very small. *Styles* two, awl-shaped, reflexed, and standing wide. *Summits* pointed.

S. VESS. none. The cup closing, contains the seed in its base.

SEED one, roundish, covered by a tunic.

BETA. (BETT. E.) *Tourn.* 286. *Gaertn.* 75.

CAL. *Cup* with five divisions, concave, permanent. *Segments* egg-oblong, blunt, (fleshy at the base. E.)

BLOSS. none.

STAM. *Filaments* five, awl-shaped, as long as the segments of the cup, and opposite to them. *Anthers* roundish, (two-lobed. E.)

PIST. *Germen* orbicular, depressed, sunk beneath the receptacle. *Styles* two, very short, upright. *Summits* acute.

S. VESS. *Capsule* imbedded in the base of the cup, of one cell, deciduous.

SEED single, kidney-shaped, compressed, enfolded in the cup.

(**OBS.** *Styles* sometimes three. E.)

SALSOLA. (SALTWORT. GLASSWORT. E.) *Tourn.* 128, *Kali.* *Gaertn.* 75. (Sm. E.)

CAL. *Cup* with five divisions. *Segments* egg-shaped, concave, permanent.

BLOSS. none, unless the cup be so considered.

STAM. *Filaments* five, very short, (awl-shaped. E.) standing upon the segments of the cup. *Anthers* oblong, (two-lobed. E.)

PIST. *Germen* globular. *Style* short, with two or three divisions. *Summits* recurved.

S. VESS. *Capsules* egg-shaped, of one cell, (horny, imbedded in the fleshy base of the cup. E.)

SEED single, large, (with a spiral, horizontal, very large *embryo*. E.)

(**OBS.** Some species have three styles. Reich.)

ULMUS. (ELM. E.) *Tourn.* 372. *Gaertn.* 49.

CAL. *Cup* one leaf, turban-shaped, wrinkled, permanent. *Border* with five clefts, upright, coloured within.

BLOSS. none.

STAM. *Filaments* five, awl-shaped, twice as long as the cup. *Anthers* with four furrows, upright, short, (bursting lengthwise externally. E.)

PIST. *Germen* roundish, upright, (compressed. E.) *Styles* two, reflexed, shorter than the stamens. *Summits* downy.

S. VESS. *Berry* oval, large, juiceless, compressed, winged with a membrane, of one cell.

SEED single, somewhat globular, but a little compressed.

(**OBS.** The number of stamens varies from four to eight. Schreb. (but generally corresponds with the segments of the cup, which in some species are but four, in others six, or more. E.)

SWERTIA. (FELWORT. E.) *Gærtn.* 114. (Sm. E.)

CAL. *Cup* with five divisions, flat, permanent. *Segments* spear shaped.

BLOSS. one petal, wheel-shaped. *Border* flat, with five divisions. *Segments* spear-shaped, larger than the cup, connected by the claws.

Nectaries ten, consisting of two small cavities in the inner side of the base of each segment of the blossom, encompassed with small upright bristles.

STAM. *Filaments* five, awl-shaped, upright, but expanding, shorter than the blossom. *Anthers* fixed sidewise, (heart-shaped. E.)

PIST. *Germen* egg-oblong, (cloven at the summit. *Style* very short, distant. E.) *Summits* two, blunt.

S. VESS. *Capsule* cylindrical, tapering to a point at each end, with one cell and two valves.

SEEDS numerous, small, fixed to the seams of the capsule, (compressed, bordered. E.)

GENTIANA. (GENTIAN. E.) *Tourn.* 40. *Gærtn.* 114.

CAL. *Cup* with five divisions, acute, permanent. *Segments* oblong.

BLOSS. one petal, tubular below. *Tube* closed, with five clefts upwards, flat, shrivelling, and variously shaped.

STAM. *Filaments* five, (or as many as the segments. E.) awl-shaped, shorter than the blossom. *Anthers* simple, (sometimes united. E.)

PIST. *Germen* oblong, cylindrical, as long as the stamens. *Styles* none, (or very short, sometimes united. E.) *Summits* two, egg-shaped, (flat. E.)

S. VESS. *Capsule* oblong, cylindrical, tapering, slightly cloven, of one cell, and two valves.

SEEDS numerous, small, fixed to the sides of the capsule on every part.

OBS. The figure of the fruit is constant; but the flowers vary in different species, both as to the number and shape of the parts. In one species the throat of the blossom is open, in another it is closed with soft hairs. In some the segments of the blossom are fringed; in others the borders are bell-shaped, upright, and plaited. Some have a starry appearance, with small segments betwixt the larger; others are funnel-shaped, &c. Linn. In *G. campestris* the blossoms have only four clefts.

XANTHIUM. (CLOT-WEED. E.) *Tourn.* 252.

Male flowers compound.

CAL. *Cup* common to many florets, formed of many leaves, tiled with slender scales, as long as the floret, equal.

BLOSS. *Compound*, uniform, tubular, equal, formed into a hemisphere. *Individual* petal one, tubular, funnel-shaped, upright, with five clefts.

STAM. *Filaments* five, forming a hollow cylinder. *Anthers* upright, parallel, not united.

RECEPT. *Common*, next to none, the florets being separated by chaff.

Female flowers beneath the others, on the same plant, two together.

CAL. *Involucrum* containing two flowers, formed of two *leaves*, opposite, each divided into three sharp lobes, the middle lobe projecting farthest, set round with hooked prickles, surrounding and entirely covering the germen to which they are fixed. *Little segments* loose.

BLOSS. none.

PIST. *Germen* oval, rough with hair. *Styles* two, similar, hair-like. *Summits* simple.

S. VESS. *Berry* dry, egg-oblong, cloven at the end, entirely covered with hooked prickles.

SEEL. *Nut* with two cells.

(ERYNGIUM. ERYNGO. *Linn. Tourn.* 173. *Juss.* 226. *Gærtn.* 20. *Lam.* 187.

Flowers aggregate.

Common receptacle conical, scaly, many-flowered, having a rigid, simple, or three-cleft, acute scale on each sessile, perfect flower.

CAL. of each flower superior, of five erect, pointed, equal leaves.

BLOSS. *Petals* five, equal, oblong, channelled, taper-pointed; inflexed about the middle.

STAM. *Filaments* capillary, straight, prominent. *Anthers* roundish, oblong, incumbent.

PIST. *Germen* simple, inferior, oblong-ovate, clothed with erect bristles. *Styles*-thread-shaped, straight, nearly erect, and parallel, shorter than the stamens, permanent. *Summits* simple.

S. VESS. *Fruit* ovate, slightly compressed, transversely, bristly, separable lengthwise into two parts.

SEEDS oblong, nearly cylindrical, coated; the coat either permanent or deciduous. *Sm. Eng. Fl. E.*)

(HYDROCOYLE. WHITE-ROT. •*Linn. Juss.* 226. *Tourn.* 173. *Lam.* 188. *Gærtn.* 22.

Flowers all perfect, prolific, and regular.

CAL. none.

BLOSS. *Petals* five, equal, ovate, spreading, undivided.

STAM. *Filaments* awl-shaped, spreading, shorter than the blossom. *Anthers* roundish.

PIST. *Germen* nearly orbicular, compressed, ribbed, smooth. *Styles* cylindrical, moderately spreading, tumid, and somewhat ovate at the base, shorter than the stamens, permanent. *Summits* simple.

Floral Receptacle none.

S. VESS. *Fruit* nearly orbicular, rather broader than long, compressed, hollowed out at the sides, crowned with the permanent, scarcely enlarged styles.

SEEDS hemispherical, tumid, each with three prominent dorsal angles. *Juncture* linear, very narrow. *Sm. Eng. Fl. E.*)

(SANICULA. SANICLE. *Linn. Juss. 225. Tourn. 173. Lam. 191. Gærtn. 20.*

Flowers separated; the central ones barren; marginal fertile, without stamens.

CAL. superior; that of the barren flower small, five-leaved, acute; of the fertile larger, nearly equal, internally coloured.

BLOSS. *Petals* in the barren flowers five, nearly equal, lanceolate; inflexed, channelled, compressed; in the fertile either deciduous, or entirely wanting.

STAM. *Filaments* capillary, spreading, twice as long as the petals. *Anthers* roundish.

PIST. *Germen* inferior, roundish, bristly; wanting, or scarcely perceptible, in the central flower. *Styles* two, reflexed, awl-shaped, about as long as the calyx, permanent. *Summits* obtuse.

S. VESS. *Fruit* ovate, acute, destitute of ribs, densely clothed with spreading, hooked, bristles, and finally separable into two seeds, convex on the outer side, flat on the inner one of which, according to Gærtner, is often abortive. *Sm. Eng. Fl. E.*)

(BUPLEURUM. HARE'S-EAR. *Tourn. 163. Lam. 189. Gærtn. 22.*

Flowers all regular, perfect and prolific.

CAL. none.

BLOSS. *Petals* five, equal, broadish wedge-shaped, very short, with a broad involute point.

STAM. *Filaments* thread-shaped, spreading rather beyond the blossom. *Anthers* roundish.

PIST. *Germen* inferior, ovate-oblong, furrowed. *Styles* very short, spreading, not extending beyond the circumference of their broad, tumid, rather depressed, basis. *Summits* simple, minute.

Floral Receptacle none, unless the dilated margin of the tumid basis of the styles may be taken for such.

S. VESS. *Fruit* ovate-oblong, obtuse, spid., a little compressed, crowned with the very short permanent styles.

SEEDS somewhat cylindrical, each with five prominent, acute, or slightly bordered ribs; the interstices flat, either smooth, granulated, or irregularly wrinkled; the summit of each rib abrupt, or angular. *Juncture* narrower than the seeds. *Sm. Eng. Fl. E.*)

(TORDYLUM. HART-WORT. *Linn. Juss. 224. Tourn. 170. Lam. 193. Gærtn. 21.*

Flowers more or less perfectly separated, irregular; those of the circumference fertile.

CAL. of five awl-shaped, unequal, deciduous, or permanent teeth.

BLOSS. *Petals* five; in the innermost flowers smallest, nearly equal and uniform, inversely heart-shaped, with an inflexed point: in those of the circumference radiant, variously unequal and irregular, in-

versely heart-shaped, with an inflexed point ; the inner one smallest, with equal lobes, the two next with very unequal lobes, and the outermost with very large equal ones ; or the three innermost have nearly equal, and the two outermost extremely unequal, lobes, the largest one of each coming together.

•STAM. *Filaments* thread-shaped, spreading, as long as the smaller petals, often wanting in the radiant flowers. *Anthers* roundish.

PIST. *Germen* inferior, ovate, rugged or bristly, transversely compressed. *Styles* thread-shaped, erect, swelling at the base, subsequently spreading, deciduous ; wanting in the central flowers. *Summits* simple.

Floral Receptacle none.

S. VESS. *Fruit* almost orbicular, compressed, transversely, crowned with the tumid bases of the styles.

SEEDS of the same form. nearly flat in the disk, scarcely ribbed or striated, sometimes rough or bristly ; the border tumid, wrinkled or crenate, bristly or naked. *Juncture* flat, close, broad, including part of the border. Sm. Eng. Fl. E.)

(CAU'CALIS. BUR-PARSLEY. *Linn. Juss.* 224. *Tourn.* 171. *Lam.* 192. *Gærtn.* 20.

Flowers imperfectly separated, irregular ; the outermost fertile.

CAL. superior, of five broad, acute, unequal, permanent leaves.

BLOSS. *Petals* more or less unequal, inversely heart-shaped with a strongly inflexed point, the lobes of each almost equal.

STAM. *Filaments* awl-shaped, shorter than the blossom, tumid, and somewhat pyramidal at the base, permanent. *Summits* abrupt, oblique.

S. VESS. *Fruit* elliptic-oblong, rather compressed transversely, tumid.

SEEDS with four principal ribs, beset each with a row of numerous ascending, awl-shaped, hooked prickles ; the intermediate spaces prickly or rough ; the inner surfaces flattish, and close together. Sm. Eng. Fl. E.)

(DAU'CUS. CARROT. *Linn. Juss.* 224. *Tourn.* 161. *Lam.* 192. *Gærtn.* 20.

Flowers separated ; the outermost irregular, barren ; inner ones fertile ; central mostly neuter, often coloured.

CAL. obsolete.

BLOSS. *Petals* inversely heart-shaped, with an inflexed point, more or less irregular ; the lobes of the four lateral ones very unequal, of the odd one equal and largest.

STAM. *Filaments* capillary, longer than the blossom, spreading. *Anthers* rather oblong.

PIST. *Germen* inferior, ovate, bristly, imperfect in the outermost, as well as in the central flowers. *Styles* thread-shaped, spreading, per-

manent, dilated at the base, and forming a double, permanent globe. *Summits* obtuse.

Floral Receptacle none.

S. VESS. *Fruit* elliptic-oblong, transversely compressed, tumid.

SEEDS with four principal ribs, bases, each with a row of numerous, flattish, somewhat confluent, taper-pointed, straight or hooked, prickles; the intermediate ribs slightly prominent, roughish; the inner surfaces flat and even, closely applied to each other. Sm. Eng. Fl. E.)

(BU'NIUM. EARTH-NUT. *Linn. Juss.* 223. *Lam.* 197. *Gærtn.* 140. *Bulbocastanum.* *Tourn.* 161.

Flowers all uniform; the innermost many of them barren.

CAL. of a few small, acute, spreading, often obsolete leaves.

BLOSS. *Petals* equal, inversely heart-shaped, with an inflexed point.

STAM. *Filaments* thread-shaped, spreading, longer than the blossom.

Anthers roundish.

PIST. *Germen* inferior, ovate-oblong, ribbed, smooth. *Styles* awl-shaped; ovate; angular, and much swelled at the base; permanent, more or less spreading. *Summits* obtuse, somewhat capitate.

S. VESS. *Fruit* ovate-lanceolate, more or less strongly ribbed, crowned with the partly obsolete calyx, without any evident *floral receptacle*, and the permanent, either upright or reflexed, styles.

SEEDS each with three slightly prominent, distant ribs, which are strongest, with intermediate furrows at the summit. Sm. Eng. Fl. E.)

(TO'RILIS. HEDGE-PARSLEY. *Adans.* 99. *Spreng. Pr.* 24. *Gærtn.* 1. 82. t. 20. f. 1. 2. *Græv. Fl. Edin.* 11. *Tordylium.* *Linn.* *Caucalis.* *Huds. Curt.*

Florets all perfect and fertile, except from occasional abortion, slightly irregular.

CAL. superior, of five short, broad, acute, permanent, nearly equal leaves.

BLOSS. *Petals* nearly equal, inversely heart-shaped, with an inflexed point, their lobes equal.

STAM. *Filaments* capillary, spreading, longer or shorter than the corolla. *Anthers* roundish.

PIST. *Germen* inferior, ovate, bristly. *Floral Receptacle* obsolete. *Styles* awl-shaped, somewhat spreading, much shorter than the corolla, permanent, and subsequently elongated, very tumid at the base. *Summits* simple. *Fruit* ovate, tumid, crowned with the spreading styles.

SEEDS destitute of ribs, covered irregularly with ascending, awl-shaped, shortish, rigid prickles, or partly with blunt, prominent, crowded, granulations; the *junction* channelled, close. Sm. Eng. Fl. E.)

(CO'NIUM. HEMLOCK. *Linn.* *Cicuta.* *Juss. Tourn.* 160.
Lam. 195. *Gærtn.* 22.

Flowers all perfect, slightly irregular.

CAL. obsolete.

BLOSS. *Petals* five, inversely heart-shaped, with an acute inflexed point; the outermost rather the largest.

STAM. *Filaments* capillary, scarcely so long as the blossom. *Anthers* roundish.

PIST. *Germen* ovate, somewhat compressed, furrowed, wrinkled. *Styles* thread-shaped, elongated, spreading, a little swelled at the base, proceeding from the dilated, depressed, wavy, permanent *floral receptacle*. *Summits* obtuse.

S. VESS. *Fruit* ovate, slightly compressed, with ten prominent, acute ribs, wavy in an unripe state, crowned with the dilated, undulated, *floral receptacle*, and the shortish, permanent, spreading styles.

SEEDS half ovate, tumid, each with five prominent, acute ribs, becoming finally straight and even; the interstices flat. *Sm. Eng. Fl. E.*)

(SEL'NUM. MILK-PARSLEY. *Linn.* *Juss.* 223. *Lam.* 200.
Gærtn. 21. *Thysselinium.* *Tourn. Spreng.*

Flowers all perfect and regular; some of the innermost only occasionally abortive.

CAL. of five minute, spreading, somewhat pointed, permanent teeth.

BLOSS. *Petals* involute, pointed, inversely heart-shaped, equal.

STAM. *Filaments* thread-shaped, spreading, about the length of the blossom. *Anthers* roundish.

PIST. *Germen* inferior, ovate, compressed, ribbed, somewhat bordered. *Styles* short and close in the flower; subsequently elongated, reflexed, flattened; their bases tumid, hemispherical. *Summits* obtuse, or capitate.

Floral Receptacle obsolete.

S. VESS. *Fruit* elliptical, transversely compressed, crowned with the calyx and styles.

SEEDS nearly elliptical, almost flat, each with three longitudinal, more or less acute, dorsal ribs; the margin dilated, flat, even, smooth, and entire, at least half as broad as the body of the seed. *Juncture* broad, flat, close, parallel to the seeds, and of the same width, not extending to their wings. *Sm. Eng. Fl. E.*)

(ATHAMANTA. STONE-PARSLEY. *Linn.* *Juss.* 223. *Lam.* 194.

Flowers imperfectly separated, regular, the innermost more or less abortive.

CAL. of five spreading, ascending, lanceolate, acute, permanent leaves.

BLOSS. *Petals* five, almost perfectly equal, inversely heart-shaped, with a broad inflexed point.

STAM. *Filaments* thread-shaped, spreading, incurved, longer than the petals. *Anthers* roundish.

PIST. *Germen* inferior, ovate, furrowed, downy, abrupt. *Styles* in the flower short, erect, each with a large tumid, ovate base; subsequently spreading as far as the calyx, or further; finally reflexed, permanent. *Summits* simple, bluntish.

Floral Receptacle wanting.

S. VESS. *Fruit* ovate, scarcely compressed, ribbed, clothed, more or less with loosely spreading, shortish hairs, and crowned by the calyx and styles.

SEEDS ovate, each with five equi-distant, prominent, stout ribs. *Juncture* close, as broad as the seeds. Sm. Eng. Fl. E.)

(PEUCED'ANUM. SULPHUR-WORT. *Linn.* *Juss.* 223. *Tourn.* 169. *Gartn.* 21.

Flowers regular, uniform, imperfectly separated; the innermost barren or abortive.

CAL. of five acute, ascending, permanent teeth.

BLOSS. *Petals* five, all very nearly equal, inversely heart-shaped, with inflexed points.

STAM. *Filaments* capillary, spreading beyond the petals. *Anthers* roundish.

PIST. *Germen* inferior, oblong, a little compressed laterally, with a rib at each side. *Styles* small, recurved, tumid, and ovate, oblong at the base, at length somewhat enlarged, permanent. *Summits* obtuse, notched.

Floral Receptacle none.

S. VESS. *Fruit* broadly elliptical, nearly orbicular, transversely compressed, crowned with the calyx and styles.

SEEDS broadly elliptical, with a notch at each end, nearly flat, each with three slightly prominent ribs, the interstices striated; the margin dilated, with a flat, even, smooth, entire, narrow wing, or border, about one third as broad as the body of the seed. *Juncture* broad, flat, close, parallel to the seeds, each of which is marked, on its perfectly flat inner side, with a pair of dark brown, continued, converging, longitudinal lines. Sm. Eng. Fl. E.)

(CNI'DIUM. PEPPER-SAXIFRAGE. *Cusson MS.* *Spreng.* *Pr.* 39. f. 3. *Peucedanum.* *Linn.*

Florets nearly regular, imperfectly separated, the innermost more or less abortive.

CAL. none.

BLOSS. *Petals* equal, obovate, or inversely heart-shaped, with an inflexed point.

STAM. *Filaments* thread-shaped, rather spreading, as long as the petals. *Anthers* roundish.

PIST. *Germen* inferior, ovate, obtuse, slightly compressed, ribbed. *Styles* in the flower very short, afterwards elongated, spreading cylin-

drical, half the length of the fruit, tumid, and nearly hemispherical at the base. *Summits* blunt.

Floral Receptacle angular, thin, undulated, at first erect; subsequently depressed by the swelling bases of the styles.

S. VESS. *Fruit* ovate, a little compressed, somewhat contracted at the upper part, crowned with the floral receptacle, and permanent, spreading or recurved, styles.

SEEDS ovate, solid, with five equi-distant, acute, slightly winged, ribs; the interstices deep, concave, or obtusangular. *Juncture* channelled, contracted. Sm. Eng. Fl. E.)

(CRITHMUM. SAMPHIRE. *Linn. Juss.* 223. *Tourn.* 169. *Lam.* 197.

Flowers all regular, perfect, prolific.

CAL. superior, of five small, broad, acute, inflexed, concave, permanent leaves.

BLOSS. *Petals* five, equal, elliptical, acute, incurved, broad at the base.

STAM. *Filaments* thread-shaped, spreading, as long as the blossoms, *Anthers* roundish.

PIST. *Germen* inferior, elliptical, furrowed. *Styles* very short, and thick, each finally a little recurved, but never equalling in length its large tumid, somewhat pyramidal base. *Summits* obtuse.

Floral Receptacle none.

S. VESS. *Fruit* elliptical, crowned with the permanent calyx and styles.

SEEDS elliptical, oblong, convex, with a thick coriaceous coat, each having five tumid, somewhat wrinkled equi-distant ribs, two of them marginal; the interstices narrow, flat. Sm. Eng. Fl. E.)

(HERACLEUM. COW-PARSNEP. *Linn. Juss.* 222. *Lam.* 200. *Sphondylium. Tourn. Gærtn.* 21.

Flowers incompletely separated; the inner ones barren, or abortive; those of the circumference perfect and prolific.

CAL. of five small, acute teeth, obliterated in the fruit.

BLOSS. *Petals* five, inversely heart-shaped, with an inflexed point; in the innermost flowers smallest, nearly equal and regular; in those of the circumference much larger, irregular, and radiant, the outer one largest, with equal lobes, the rest more or less unequally divided; the two inner ones smallest.

STAM. *Filaments* thread-shaped, longer than the blossom, spreading, a little incurved. *Anthers* roundish.

PIST. *Germen* inferior, ovate, slightly compressed, transversely. *Styles* at first erect, rather short; subsequently flattened, spreading, and somewhat elongated; broad and pyramidal at the base. *Summits* obtuse, notched.

Floral Receptacle undulated, crenate, obtuse, a little broader than the bases of the styles to which it is united.

S. VESS. *Fruit* inversely heart-shaped, somewhat elliptical, compressed,

transversely, nearly flat, crowned with the floral receptacle and styles.

SEEDS of the same form, deeply notched at the summit, more or less evidently at the base; flat in the disk with three slender dorsal ribs, and two distant marginal ones, the interstices occupied in their upper half by four intermediate, coloured, slightly channelled, parallel lines; border narrow, somewhat tumid, smooth, even, and entire; inner surface flat and even, with a pair of obtuse coloured lines, extending from near the summit to the middle. *Juncture* close, flat, parallel to the seeds, and nearly as broad. Sm. Eng. Fl. E.)

(**LIGUSTICUM.** **LOVAGE.** *Linn. Juss. Tourn.* 171. *Lam.* 198. *Gaertn.* 85.

Flowers all perfect, prolific, regular.

CAL. of five small, pointed, erect, permanent leaves; broad at the base.

BLOSS. *Petals* five, elliptical, flattish, with an inflexed point; their base contracted.

STAM. *Filaments* thread-shaped, spreading, shorter than the blossom. *Anthers* roundish.

PIST. *Germen* oblong, abrupt, moderately compressed, furrowed.

Styles in the flower scarcely longer than the calyx, erect, stout, angular, tumid at the base; subsequently a little elongated, spreading, permanent. *Summits* simple.

Floral Receptacle none.

S. VESS. *Fruit* elliptic-oblong, rather compressed, crowned with the calyx and styles.

SEEDS oblong, each with three dorsal, and two marginal, equal, longitudinal wings. Sm. Eng. Fl. E.)

(**ANGELICA.** **ANGELICA.** *Linn. Juss.* 222. *Lam.* 198. *Gaertn.* 85.

Flowers all perfect, prolific, and regular.

CAL. none.

BLOSS. *Petals* five, equal, lanceolate, flattish, with an inflexed point; their base contracted.

STAM. *Filaments* thread-shaped, spreading, longer than the blossom. *Anthers* roundish.

PIST. *Germen* inferior, ovate, strongly furrowed. *Styles* in the flower very short, erect, broad, and tumid at the base; subsequently elongated, recurved. *Summits* capitate.

Floral Receptacle thin, wavy, projecting a little beyond the bases of the styles as the fruit advances to maturity.

S. VESS. *Fruit* elliptical, slightly compressed, bordered, crowned with the floral receptacle, and spreading styles.

SEEDS convex and oblong, with three elevated, longitudinal, dorsal wings, a little distant from their lateral flat border, which scarcely exceeds the wings in breadth; interstices more or less wrinkled. Sm. Eng. Fl. E.)

(SI'UM. WATER-PARSNEP. *Linn. Juss. 222. Tourn. 162.*
Lam. 197. Gærtn. 23.

Flowers all uniform and generally perfect.

CAL. of five small, acute, unequal leaves, often obsolete.

BLOSS. *Petals* equal, inversely heart-shaped, or obovate, with more or less of an inflexed point.

STAM. *Filaments* thread-shaped, spreading, longer than the blossom. *Anthers* roundish.

PIST. *Germen* inferior, roundish, ovate, striated. *Styles* cylindrical, more or less spreading, moderately swelling at the base, shorter than the petals, permanent. *Summits* obtuse.

S. VESS. *Fruit* ovate, or orbicular, slightly compressed, furrowed, crowned with the permanent styles and withered calyx, without any prominent floral receptacle.

SEEDS tumid, convex, each with five generally strong ribs. *Sm. Eng. Fl. E.)*

(SI'PON. HONE-WORT. *Linn. Juss. 221.*

Flowers all uniform, perfect, and regular.

CAL. obsolete, or bluntly toothed.

BLOSS. *Petal* equal, elliptic-lanceolate, or inversely heart-shaped, with an involute point.

STAM. *Filaments* thread-shaped, spreading, about as long as the blossom. *Anthers* roundish.

PIST. *Germ.* inferior ovate, striated. *Styles* very short and thick, each with a very large, round, sometimes depressed base, permanent. *Summits* obtuse, distant.

S. VESS. *Fruit* ovate, or nearly orbicular, compressed, crowned with the permanent withered styles, without any floral receptacle.

SEEDS convex, with three dorsal ribs. *Sm. Eng. Fl. E.)*

(OLIAN'THE. WATER-DROPWORT. *Linn. Juss. 221.*
Tourn. 163. Lam. 203. Gærtn. 22. Phellandrium.
Linn. Juss. Fl. Tourn. 161.

Flowers more or less completely separated, or partially imperfect; the outermost very irregular, abortive; the innermost smaller, regular, and prolific.

CAL. superior, of five large, lanceolate, acute, somewhat unequal, permanent leaves.

BLOSS. *Petals* five, inversely heart-shaped with inflexed points: in the fertile flowers nearly equal; in those of the circumference very unequal, but with equal lobes in each petal.

STAM. *Filaments* thread-shaped, longer than the blossom. *Anthers* incumbent, small, roundish.

PIST. *Germen* inferior, ovate-oblong, furrowed. *Style*s awl-shaped, slender, tumid at the base; in the barren flowers short and imperfect, with a greatly dilated or depressed base, in the place of the floral receptacle. *Summits* small, obtuse, recurved.

S. VESS. *Fruit* oblong, or somewhat ovate, obtuse, with a corky bark, and three or five tumid, unequal, rounded ribs, with narrow, deep, intermediate furrows, in some species intermediate ribs; the summit crowned with the permanent calyx, and rigid, elongated, somewhat spreading styles.

SEEDS ovate, with a light, furrowed, more or less spongy, bark. Sm. Eng. Fl.

Obs. In conformity with the adopted arrangement the genus *Phellandrium* is united with *Oenanthe*; though it must be admitted that its having no general involucre, and, as suggested by Mr. Greville, all the florets being fertile, and not radiate, and the fruit also differing, especially in the arrangement of the *vitta*, present considerable objections. E.)

(CICUTA. COWBANE. Linn. Spreng. Pr. 19. Cicutaria. Juss. 221. Lam. 195.

Flowers uniform, perfect, and nearly regular.

CAL. superior, of five broad, acute, somewhat unequal, permanent leaves.

BLOSS. *Petals* five, ovate, or slightly heart-shaped, with an incurved point, all nearly equal.

STAM. *Filaments* thread-shaped, spreading, about as long as the blossom. *Anthers* roundish.

PIST. *Germen* inferior, hemispherical, compressed, ribbed. *Styles* thread-shaped, short, erect, scarcely tumid at the base; subsequently elongated, spreading, and permanent. *Summits* obtuse, almost capitate.

Floral Receptacle depressed, withering.

S. VESS. *Fruit* nearly orbicular, heart-shaped at the base, a little compressed, crowned with the permanent calyx concealing the floral receptacle, and with the recurved elongated styles.

SEEDS hemispherical, tumid, each with three double dorsal ribs; their *junction* contracted. Sm. Eng. Fl. E.)

(ÆTHUSA. FOOL'S-PARSLEY. Linn. Juss. 220. Lam. 196. Gärtn. 22.

Flowers all perfect; the marginal ones a little regular.

CAL. superior, of five very minute, pointed, spreading leaves, often scarcely discernible.

BLOSS. *Petals* five, inversely heart-shaped, deeply lobed, with an acute inflexed point, the outermost rather the largest.

STAM. *Filaments* thread-shaped, horizontal, shorter than the blossom. *Anthers* roundish.

PIST. *Germen* inferior, ovate, deeply furrowed, rather pointed. *Styles* short, spreading, tumid, and ovate at the base; subsequently reflexed, scarcely elongated. *Summits* obtuse.

S. VESS. *Fruit* ovate, crowned by the closely reflexed prominent styles, without any visible floral receptacle.

SEEDS ovate, moderately convex, with five tumid, rounded, acutely keeled, ribs, and deep acutangular interstices; their inner surfaces dilated, flat, marked with a pair of coloured longitudinal lines, and closely pressed together. Sm. Eng. Fl. E.]

(CORIANDRUM. CORIANDER. *Linn. Juss.* 220. *Tourn.* 168. *Lam.* 196. *Gaertn.* 22.

Flowers all perfect; the outermost very irregular, prolific; the innermost regular, abortive.

CAL. superior, of five broad, acute, unequal, permanent, withering leaves.

BLOSS. *Petals* five, inversely heart-shaped, with an inflexed point; those of the innermost flowers nearly equal, and regular; of the marginal ones irregular; the two inner ones equal, deeply lobed; two next with two very unequal lobes; the odd one with two very large, equal, obovate lobes.

STAM. *Filaments* thread-shaped, spreading, as long as the smaller petals. *Anthers* roundish.

PIST. *Germen* a simple or double globe, smooth. *Styles* thread-shaped, spreading, each in length equal to the diameter of the fruit; their bases conical, tapering. *Summits* small, obtuse.

Floral Receptacle none.

S. VESS. *Fruit* a single or double globe, crowned with the wide-spreading styles and withered calyx, smooth, without ribs.

SEEDS semi-orbicular, concave. Sm. Eng. Fl. E.)

(SCANDIX. SHEPHERD'S-NEEDLE. *Linn. Juss.* 220. *Tourn.* 173. *Gaertn.* 85. *Chærophyllum.* *Lam.* 201. f. 6.

Flowers separated; the innermost barren.

CAL. none.

BLOSS. *Petals* unequal, undivided, tapering at the base, spreading.

STAM. *Filaments* thread-shaped, spreading, the length of the blossom. *Anthers* roundish.

PIST. *Germen* inferior, oblong, somewhat compressed, more or less rough, with close hairs. *Styles* spreading, short, finally erect, permanent, swelled at the base. *Summits* simple: in the barren flower obtuse.

S. VESS. *Fruit* ribbed, somewhat bristly, elliptic-oblong, with a straight linear, flat, bristly beak, five times its own length, crowned with the permanent, enlarged, five-lobed, coloured receptacle of the flower, surrounding the base of the styles. Sm. Eng. Fl. E.)

(ANTHRISCUS. BEAKED-PARSLEY. *Spreng. Pr.* 27. *Scandix.* *Linn.*

Florets perfect, regular, and generally prolific.

CAL. none.

BLOSS. *Petals* equal, uniform, inversely heart-shaped; with a small inflexed point.

STAM. *Filaments* capillary, the length of the corolla, spreading. *Anth-
thers* roundish.

PIST. *Germen* inferior, ovate-oblong, bristly; naked and angular at the summit. *Styles* awl-shaped, short, erect, tumid at the base, rather distant. *Summits* obtuse.

Floral Receptacle slightly bordered.

S. VESS. *Fruit* ovate, or somewhat lanceolate, tumid, beaked.

SEEDS without ribs, covered irregularly with short incurved bristles, except the beak, which is angular and naked, much shorter than the body of the fruit, abrupt, crowned with the permanent styles. Sm. Eng. Fl. E.)

(CHÆROPHYLLUM. CHERVIL. Linn. Juss. 220. Lam.
201. f. 1. 2. Gærtn. 23.

Flowers imperfectly separated; the innermost barren.

CAL. none.

BLOSS. *Petals* somewhat unequal, inversely heart-shaped, with an inflexed point.

STAM. *Filaments* thread-shaped, spreading, about as long as the blossom. *Anthers* roundish.

PIST. *Germen* inferior, oblong, slightly compressed, smooth. *Styles* short, awl-shaped, a little spreading, tumid at the base. *Summits* simple.

S. VESS. *Fruit* lanceolate, smooth and even, destitute of furrows or prominent ribs, with a short, angular, smooth beak, crowned with the depressed, wavy, receptacle of the flower, subtending the permanent, slightly recurved styles. Sm. Eng. Fl. E.)

(MYRRHIS. CICELY. Tourn. 166. Spreng. Pr. 28. Gærtn.
23. Grev. Fl. Edin. 39. Scandix. Chærophyllum.
Linn.

Florets imperfectly separated; the innermost barren.

CAL. none.

BLOSS. *Petals* somewhat unequal, uniform, inversely heart-shaped, with an inflexed taper point.

STAM. *Filaments* thread-shaped, spreading, as long as the petals, or longer. *Anthers* roundish.

PIST. *Germen* inferior, linear-oblong, somewhat club-shaped, abrupt, furrowed, smooth, slightly compressed. *Styles* awl-shaped, a little spreading, very tumid, and almost globose, at the base. *Summits* obtuse, or slightly capitate.

Floral Receptacle wanting.

S. VESS. *Fruit* linear-lanceolate, a little curved, deeply furrowed, without a beak, altogether smooth, except, in some instances, a minute bristly roughness at the upper part, either of the furrows or of the angles, which latter are either acute, and very prominent, or

obtuse and dilated, the summit crowned with the thick bases of the spreading, permanent styles.

HERB. Perennial or biennial herbs, aromatic, pungent, or sweet. Sm. Eng. Fl. E.)

(IMPERATORIA. MASTERWORT. *Linn. Juss.* 220. *Lam.* 199. *Gartn.* 21.

Flowers all perfect and prolific, the outermost only very slightly irregular.

CAL. none.

BLOSS. *Petals* inversely heart-shaped, with a slender incurved point; those of the outermost flowers only a little irregular.

STAM. *Filaments* thread-shaped, spreading, longer than the petals. *Anthers* almost globular.

PIST. *Germen* inferior, nearly orbicular, compressed, ribbed. *Styles* short, distant, ovate, and very tumid at the base. *Summits* capitate.

Floral Receptacle none.

S. VESS. *Fruit* orbicular, crowned with the bases of the styles, having a sinus at top and bottom, and a rounded, dilated, closely compressed margin.

SEEDS convex, with three prominent dorsal ribs, and a broad, flat, even border, as wide at each side as the body of the seed. Sm. Eng. Fl. E.)

(PASTINACA. PARSNIP. *Linn. Juss.* 219. *Tourn.* 170. *Lam.* 206. *Gartn.* 21.

Flowers all regular, uniform, perfect; and generally prolific.

CAL. of five very minute, obsolete teeth, permanent, concealed by the floral receptacle.

BLOSS. *Petals* five, broad-lanceolate, pointed, involute, equal.

STAM. thread-shaped, spreading, about the length of the petals. *Anthers* roundish.

PIST. *Germen* inferior, ovate, compressed, transversely, obscurely striated. *Styles* in the flower very short, erect, subsequently spreading, recurved, moderately elongated; greatly dilated, rather depressed at the base, and confluent with the broad, orbicular, wavy, rather thin floral receptacle. *Summits* capitate.

S. VESS. *Fruit* broadly elliptical, somewhat obovate, compressed transversely, crowned with the floral receptacle and styles.

SEEDS of the same form, with a slight notch at the summit; very nearly flat at the back, with three dorsal ribs, and two distant, more prominent and broader ones at the circumference, beyond which is a thin, narrow, even, acute border; with a pair of continued, converging, brown lines, shorter than the seed. *Juncture* close, flat, parallel to the seeds, and nearly as broad. Sm. Eng. Fl. E.)

(SMYRNIUM. ALEXANDERS. *Linn. Juss.* 219. *Tourn.* 168.
Lam. 204. *Gærtn.* 22.

Flowers nearly uniform, and regular; the innermost barren or abortive.

CAL. of five very minute, acute, permanent leaves.

BLOSS. *Petals* five, equal, lanceolate, acute, incurved, in some inversely heart-shaped.

STAM. *Filaments* capillary, as long as the blossom. *Anthers* roundish.

PIST. *Germen* inferior, ovate, angular, and furrowed. *Styles* thread-shaped, widely spreading, tumid, and somewhat depressed at the base. *Summits* simple.

S. VESS. *Fruit* solid, somewhat orbicular, broader than long, much hollowed out at each side, crowned with the styles, or their small pyramidal bases.

Floral Receptacle none.

SEEDS turgid, with three prominent, acute, ribs; the interstices convex; the *juncture* more or less contracted. Sm. Eng. Fl. E.)

(ME'UM. SPIGHEL. FENNEL. *Tourn. Inst.* 512. t. 165.
Fl. Br. 308. *Spreng. Pr.* 32. *Gærtn.* 23. *Athamanta*. *Æthusa*. *Anethum*. *Linn.*

Flowers all uniform, perfect, and prolific.

CAL. none.

BLOSS. *Petals* five, equal, obovate, with an inflexed point.

STAM. *Filaments* about the length of the petals, spreading, incurved. *Anthers* roundish.

PIST. *Germen* inferior, ovate, striated, abrupt, a little compressed. *Styles* tumid at the base, very short in the flower, afterwards a little elongated and recurved. *Summits* simple.

Floral Receptacle none.

S. VESS. *Fruit* elliptic-oblong, very slightly compressed, contracted at the summit, and crowned with the permanent styles.

SEEDS convex, with three dorsal, and two marginal, equidistant prominent ribs, the interstices nearly flat and even. *Juncture* nearly as broad as the seeds. Sm. Eng. Fl. E.)

(CARUM. CARAWAY. *Linn. Juss.* 219. *Gærtn.* 23. *Carui. Tourn.*

Flowers separated, rather irregular; the innermost barren; those of the circumference perfect and prolific.

CAL. of five very minute, acute leaves, often obsolete.

BLOSS. *Petals* five, somewhat unequal, inversely heart-shaped, with inflexed points.

STAM. *Filaments* about as long as the petals, straight, spreading. *Anthers* roundish, two-lobed.

PIST. *Germen* inferior, ovate, abrupt, more or less oblique. *Styles* tumid at the base, very short in the flower, afterwards elongated, thread-shaped, widely spreading. *Summits* bluntish.

Floral receptacle annular, thin, wavy, extending beyond the bases of the styles, permanent.

S. VESS. *Fruit* elliptic-oblong, moderately compressed, crowned with the floral receptacle and styles.

SEEDS nearly cylindrical, contracted at each end, with three dorsal, and two marginal, acute, slender ribs, the interstices somewhat convex, smooth. *Juncture* close, as broad as the seeds. Sm. Eng. Fl. E.)

(PIMPINELLA. BURNET-SAXIFRAGE. *Linn. Juss.* 219. *Lam.* 203. *Tragoselinum.* *Tourn.* 163.

Flowers regular, either perfect, or diceious.

CAL. none.

BLOSS. *Petals* five, equal, or very nearly so, inversely heart-shaped, with an inflexed point.

STAM. *Filaments* capillary, spreading, longer than the blossom. *Anthers* roundish.

PIST. *Germen* inferior, ovate, a little compressed, smooth, finely ribbed. *Styles* capillary, somewhat spreading, short in the flower, afterwards as long as the fruit or longer; tumid, and nearly globular at the base. *Summits* oblong, somewhat capitate.

Floral Receptacle none.

S. VESS. *Fruit* ovate, crowned with the long, capillary, slightly spreading, permanent styles.

SEEDS ovate, each with five rather sharp, not very prominent ribs; the interstices convex. *Juncture* contracted, linear. Sm. Eng. Fl. E.)

(ÆGOPO'DIUM. GOUT-WEED. *Linn. Juss.* 219. *Gærtn.* 140.

Flowers all perfect and prolific, the outermost only slightly irregular.

CAL. none.

BLOSS. *Petals* inversely heart-shaped, broad, with an inflexed point; the outer one, of the marginal flowers, a little the largest.

STAM. *Filaments* thread-shaped, spreading, the length of the petals. *Anthers* roundish.

PIST. *Germen* inferior, turbinate, slightly compressed, furrowed, oblique, or not quite equilateral, broadest at the top. *Styles* at first short, erect, tumid and ovate at the base; subsequently elongated, thread-shaped, widely spreading and reflexed, reaching half the length of the fruit, permanent. *Summits* capitate.

Floral Receptacle none.

S. VESS. *Fruit* elliptic-oblong, solid, slightly compressed, crowned with the reflexed styles.

SEEDS oblong, imperfectly cylindrical, slightly incurved, each with three dorsal, and two marginal, prominent, equidistant ribs; the interstices nearly flat; the *juncture* close, hardly so broad as the diameter of each seed. Sm. Eng. Fl. E.)

(**APIUM. PARSLEY.** *Linn. Juss.* 219. *Tourn.* 160. *Lam.* 196. *Gærtn.* 22.

Flowers uniform, and nearly regular, almost all perfect and prolific.

CAL. obsolete.

BLOSS. *Petals* five, roundish, or obovate, with an inflexed point, all very nearly equal.

STAM. *Filaments* thread-shaped, about the length of the blossom. *Anthers* roundish.

PIST. *Germen* inferior, almost orbicular, somewhat compressed. *Styles* at first shorter than the stamens, nearly erect, subsequently elongated, thread-shaped, reflexed; greatly swelled at the base, and subtended by a thin, orbicular, wavy, floral receptacle. *Summits* obtuse.

S. VESS. *Fruit* ovate, or nearly orbicular, solid, slightly compressed, flattened at the sides, crowned with the withered floral receptacle, and spreading styles.

SEEDS ovate, with three acute dorsal ribs, and two marginal ones, meeting at the *juncture*, which is flat and the breadth of the seeds; interstices flat and even. *Sm. Eng. Fl. E.*)

TRIGYNIA.

VIBURNUM. (GUelder-ROSE. *E.*) *Tourn.* 376, *Opulus*, and 377. *Gærtn.* 27.

CAL. *Cup* with five divisions, superior, very small, permanent.

BLOSS. one petal, bell-shaped, with five clefts. *Segments* blunt, reflexed.

STAM. *Filaments* five, awl-shaped, as long as the blossom. *Anthers* roundish.

PIST. *Germen* beneath, roundish, (rather compressed. *E.*) *Style* none, but instead thereof, a turban-shaped gland. *Summits* three, (blunt. *E.*)

S. VESS. *Berry* roundish, of one cell. " " "

SEED single, roundish, hard as bone, (compressed. *E.*)

SAMBUCUS. (ELDER. *E.*) *Tourn.* 376. *Gærtn.* 27.

CAL. *Cup* superior, of one leaf, very small, with five divisions, permanent.

BLOSS. one petal, wheel-shaped, but concave, with five clefts, blunt. *Segments* reflexed.

STAM. *Filaments* five, awl-shaped, as long as the blossom. *Anthers* roundish, (heart-shaped. *E.*)

PIST. *Germen* beneath, egg-shaped, blunt. *Style* none, but instead thereof a ventricose gland. *Summits* three, blunt.

S. VESS. *Berry* globular, of one cell.

SEEDS three, convex on one side, angular on the other.

STAPHYLE'A. (BLADDER-NUT. E.) *Tourn.* 386, *Staphylodendron.* *Gærtn.* 69.

CAL. *Cup* with five divisions, concave, roundish, coloured, as large as the blossom.

BLOSS. *Petals* five, oblong, upright, resembling the cup.

Nectary concave, urn-shaped, situated at the bottom of the flower, upon the receptacle of the fruit.

STAM. *Filaments* five, oblong, upright, as long as the cup. *Anthers* simple, (roundish. E.)

PIST. *Germen* rather tumid, with three divisions. *Styles* (two or three. E.) simple, somewhat longer than the stamens. *Summits* blunt, contiguous.

S. VESS. *Capsules* (two or three, E.) bladder-shaped, flaccid, joined by seams lengthwise, tapering at the points, opening inwardly.

SEEDS two, hard as bone, globular, obliquely tapering, with a circular concavity on the side, near the point.

OBS. *S. pinnata* has three pistils, but only two seeds. *Lin.*

TAM'ARIX. (TAMARISK. E.) *Gærtn.* 61. (Sm. E.)

CAL. *Cup* with five divisions, upright, blunt, permanent, half the length of the blossom.

BLOSS. *Petals* five, egg-shaped, concave, blunt, expanding.

STAM. *Filaments* five, hair-like, (sometimes, with five intermediate ones. E.) *Anthers* roundish, (incumbent. E.)

PIST. *Germen* tapering to a point. *Style* none. *Summits* three, oblong, feathered, rolled back.

S. VESS. *Capsule* oblong, pointed, triangular, longer than the cup, of one cell and three valves.

SEEDS numerous, very small, (with a stalked, feathery crown. E.)

CORRIGI'OLA. (STRAPWORT. E.) *Gærtn.* 75.

CAL. *Cup* permanent, the size of the blossom, of five leaves; leaflets egg-shaped, concave, expanding, membranous at the edge.

BLOSS. *Petals* five, egg-shaped, expanding, scarcely larger than the cup.

STAM. *Filaments* five, awl-shaped, small, (not half so long as the petals. E.) *Anthers* (of two roundish lobes. E.)

PIST. *Germen* egg-shaped, three-cornered. *Style* none. *Summits* three, blunt.

S. VESS. A dry berry; egg-shaped, but somewhat three-cornered, within the closed cup.

SEED single, roundish, but with three furrows, connected by a thread which rises from the bottom of the seed-vessel.

(**OBS.** By other authorities the styles have been estimated as three, short, and spreading: of only two. E.)

TETRAGYNIA.

PARNAS'SIA. (GRASS OF PARNASSUS. E.) *Gærtn.* 60.
(Sm. E.)

CAL. *Cup* with five divisions, permanent. *Segments* oblong, expanding.

BLOSS. *Petals* five, nearly circular, scored, concave, expanding, (sometimes fringed at the margins. E.) *Nectaries* five, each being a concave heart-shaped substance, furnished with thirteen (occasionally fewer, E.) rays set along the edge, gradually taller, and each terminated by a pellucid little globe, (or with three divisions, rays equal, each bearing a globule.)

STAM. *Filaments* five, awl-shaped, (spreading, each in its turn incumbent over the pistil. E.) *Anthers* compressed, fixed sidewise to the filaments.

PIST. *Germen* egg-shaped, large. *Style* none, but instead thereof an open orifice. *Summits* four, blunt, permanent, enlarging as the seed ripens.

S. VESS. *Capsule* egg-shaped, but with four angles, one cell, and four valves. *Receptacle* in four parts, growing to the valves.

SEEDS numerous, oblong, (curved upwards, each bordered with a narrow, longitudinal wing. E.)

Obs. The nectary gives the Essential Character. *Linn.* (The capsule sometimes appears incompletely four-celled. E.)

PENTAGYNIA.

STATICE. (THRIFT. E.) *Tourn.* 177. *Gærtn.* 44.

CAL. *Common Cup* varying in different species.

Proper Cup one leaf, funnel-shaped. *Tube* narrow.

Border entire, plaited, membranous.

BLOSS. funnel-shaped. *Petals* five, united and narrower at the base, broader upwards, blunt, expanding.

STAM. *Filaments* five, awl-shaped, shorter than the blossom, attached to the claws of the petals. *Anthers* fixed sidewise to the filaments, (incumbent. E.)

PIST. *Germen* extremely small. *Styles* five, thread-shaped, distant. *Summits* acute.

S. VESS. *Capsule* oblong, rather cylindrical, membranous, with five sharp points, one cell, without valves, inclosed in the shrivelled blossom, and that again in the closed cup.

SEED single, oblong, (suspended by a long thread-like receptacle. E.)

Obs. *S. Armeria* has its flowers in a roundish head, inclosed by a triple common calyx. In *S. Limonium* they are disposed in an oblong form, with a tiled common calyx. *Linn.*

LINUM. (FLAX. E.) *Tourn.* 176.

CAL. *Cup* five leaves, small, spear-shaped, upright, permanent.

BLOSS. funnel-shaped. *Petals* five, oblong, large, blunt, gradually expanding, and growing broader upwards.

STAM. *Filaments* five, awl-shaped, upright, as long as the cup, (alternating with these are the rudiments of five more.) *Anthers* simple, arrow-shaped.

PIST. *Germen* egg-shaped. *Styles* five, thread-shaped, upright, as long as the stamens. *Summits* simple, reflexed.

S. VESS. *Capsule* globular, with five imperfect angles, ten cells, and ten valves, opening at the top. *Partitions* membranous, very thin, connecting the valves.

SEEDS solitary, egg-shaped, but flattened, tapering to a point, glossy.

OBS. In many species, (perhaps in all,) the filaments are united at the base. *L. Radiola* having only four stamens, four pistils, &c. will now be found arranged as the genus *Radiola* of Gmelin. E.)

SIBBALDIA. (SIBBALDIA. SILVER-WEED. E.) *Gærtn.* 73.

CAL. *Cup* one leaf, with ten shallow clefts, upright at the base, permanent. *Segments* alternately narrower, half spear-shaped, equal, expanding, (veiny. E.)

BLOSS. *Petals* five, egg-shaped, inserted into the margin of the cup.

STAM. *Filaments* five, hair-like, shorter than the petals, (inserted on the margin of the cup between them. E.) *Anthers* small, blunt.

PIST. *Germens* five, egg-shaped, very short. *Styles* as long as the stamens, and placed upon the sides of the germens. *Summits* somewhat globular.

S. VESS. none. The cup closes upon the seed.

SEEDS five, longish, (rather compressed. E.)

OBS. The pistils sometimes, though rarely, are found ten in number, other flowers on the same plant having only five. Linn.

(HEXAGYNIA. E.)

DRO'SERA. (SUN-DEW. E.) *Tourn.* 127. *Ros Solis.* *Gærtn.* 61.

CAL. *Cup* one leaf, with five clefts, acute, upright, permanent.

BLOSS. funnel-shaped. *Petals* five to eight, nearly egg-shaped, (with claws, E.) blunt, somewhat larger than the cup.

STAM. *Filaments* five to eight, awl-shaped, as long as the cup. *Anthers* small.

PIST. *Germen* roundish. *Styles* six to eight, simple, as long as the stamens. *Summits* simple.

S. VESS. 'Capsule nearly egg-shaped, of one cell, with three, four, or five valves at the top.

SEEDS numerous, very small, nearly egg-shaped, rough.

Obs. *D. rotundifolia*, and *D. longifolia*, have six styles, and *D. anglica*, eight. (Sir J. E. Smith observes that the number of styles, in this genus is always double the number of the valves of the capsule. E.)

POLYGYNIA.

MYOSU'RUS. (MOUSE-TAIL. E.) *Gærtn.* 74. (Sm. E.)

CAL. Cup five leaves. Leaflets half spear-shaped, blunt, reflexed, coloured, deciduous, joined together above the base, (spurred below their point of insertion. E.)

BLOSS. Petals five, very small, shorter than the cup, tubular at the base, opening obliquely inwards.

STAM. Filaments five, (or more,) as long as the cup. Anthers oblong, upright, (of two linear, parallel cells. E.)

PIST. Germens numerous, seated upon the receptacle, which forms an oblong cone. Styles none. Summit (solitary, minute. E.)

S. VESS. none. Receptacle very long, shaped like a style, covered by the seeds, which are laid one over another like tiles.

SEEDS numerous, oblong, tapering to a point.

Obs. The number of stamens is variable. This genus is nearly related to *Ranunculus*. Linn.; who was inclined to consider the petals as nectaries, (honey being sometimes found at their base. E.)

CLASS VI.

HEXANDRIA.

THE flowers of this Class contain six stamens, all of the same length, whereas in the Tetradynamia Class, the stamens, though six in number, are unequal in length, four of them being long, and two of them short; but as the difference in their length is not always very obvious, it may further be remarked, that in the Hexandria Class none of the flowers have four petals, as is the case with all those of the Class Tetradynamia.

The *Bulbous Roots* in this Class are some of them noxious, as those of *Narcissus*, *Scilla*, and *Fritillaria*; others are corrosive, as *Allium*, but by roasting or boiling, they lose great part of their acrimony.

HEXANDRIA (Six Stamens.)

MONOGYNIA (One Pistil.)

<i>Galanthus.</i>	<i>Scilla.</i>	<i>Tamus.</i>
<i>Leucojum.</i>	<i>Hyacinthus.</i>	<i>Juncus.</i>
<i>Narcissus.</i>	<i>Anthericum.</i>	<i>Luciola.</i>
<i>Allium.</i>	<i>Narthecium.</i>	<i>Berberis.</i>
<i>Fritillaria.</i>	<i>Asparagus.</i>	<i>Frankenia.</i>
<i>Tulipa.</i>	<i>Compositaria.</i>	<i>Peplis.</i>
<i>Ornithogalum.</i>	<i>Acorus.</i>	

(DIGYNIA (Two Pistils.)

Oxyria. E.)

TRIGYNIA (Three Pistils.)

<i>Rumex.</i>	<i>Tofieldia.</i>	<i>Triglochin.</i>
<i>Colchicum.</i>	<i>Scheuchzeria.</i>	

HEXAGYNIA (Six Pistils.)

Aristolochia.

POLYGYNIA (Many Pistils.)

Alisma.

MONOGYNIA.

GALANTHUS. (SNOWDROP. E.) *E. Bot.* 19.

CAL. *Sheath* oblong, blunt, compressed, shrivelling, opening at the flat side.

BLOSS. *Petals* three, oblong, blunt, concave, limber, equal, standing open.

Nectary cylindrical, nearly half as long as the petals, composed of three leaves resembling petals, parallel, blunt, notched at the end.

STAM. *Filaments* six, hair-like, very short. *Anthers* (much longer, E.) approaching, tapering, and ending in a bristle, (discharging their pollen by two terminal pores. E.)

PIST. *Germen* globular, beneath. *Style* thread-shaped, longer than the stamens. *Summits* simple, (acute. E.)

S. VESS. *Capsule* nearly globular, with three obtuse angles, three cells, and three valves.

SEEDS many, globular, (attached to the partitions of the valves. E.)

OBS. *Sheath* cloven at the end. (The parts described above as a nectary are considered by some Botanists as merely so many additional petals. E.)

LEUCOJUM. (SNOWFLAKE. E.) *Tourn.* 208. Narcisso-Leucojum.

CAL. *Sheath* oblong, blunt, compressed, opening on the flat side, shrivelling.

BLOSS. Bell-shaped, expanding. *Petals* six, egg-shaped, flat, united at the base, thicker and stiffer at the ends.

STAM. *Filaments* six, like bristles, very short, (from the summit of the germen. E.) *Anthers* oblong, blunt, four-sided, upright, distant, (opening by two terminal pores. E.)

PIST. *Germen* roundish, beneath. *Style* club-shaped, blunt. *Summit* bristle-shaped, upright, acute, longer than the stamens.

S. VESS. *Capsule* turban-shaped, of three cells and three valves.

SEEDS numerous, roundish.

NARCIS'SUS. (DAFFODIL. E.) *Tourn.* 185:

CAL. *Sheath* oblong, blunt, compressed, opening upon the flat side, shrivelling.

BLOSS. *Petals* six, egg-shaped, tapering to a point, flat, fixed on the outside above the base of the tube of the nectary.

Nectary one leaf, (regular, E.) cylindrical below, funnel-shaped upwards, (containing honey at the bottom of the tube; E.) border coloured, (cup-shaped. E.)

STAM. *Filaments* six, awl-shaped, fixed to the tube of the nectary, but shorter than it. *Anthers* rather long, (bursting along their outer edges. E.)

PIST. *Germen* beneath, roundish, with three blunt angles. *Style* thread-shaped, longer than the stamens. *Summit* with three clefts, concave, blunt, (triangular. E.)

S. VESS. *Capsule* roundish, bluntly, three angulars, with three cells and three valves.

SEEDS numerous, globular, with little appendages.

AL'LIIUM. (GARLIC. E.) *Tourn.* 206. *Gærtn.* 16.

CAL. *Sheath* common to several flowers, roundish, shrivelling.

BLOSS. *Petals* six, oblong, (the three innermost smaller. E.)

STAM. *Filaments* six, awl-shaped, generally as long as the blossom. *Anth.* oblong, upright.

PIST. *Germen* superior, short, somewhat three-cornered, the corners marked by a grooved line. *Style* simple. *Summit* acute.

S. VESS. *Capsule* very short, broad, of three lobes, three cells, and three membranous valves with central partitions. E.)

SEEDS (few, covered with a black membrane. E.)

Obs. In some species every other stamen is broader, forked at the end, and the anther fixed in the fork. *Lin.*

FRITILLA'RIA. (FRITILLARY. E.) *Tourn.* 201. *Gærtn.* 17. (Sm. E.)

CAL. *Cup* none.

BLOSS. Bell-shaped, expanding at the base. *Petals* six, oblong, parallel.

Nectary a cavity in the base of each petal.

STAM. *Filaments* six, awl-shaped, approaching the style, as long as the blossom. *Anth.* four-cornered, oblong, upright, (attached to the back. E.)

PIST. *Germen* oblong three-sided, blunt. *Style* simple, longer than the stamens. *Summit* with three clefts, expanding, blunt, (downy on the upper side. E.)

S. VESS. *Capsule* oblong, blunt, with three lobes, three cells, and three valves (connected by net-work, with central partitions. E.)

SEEDS many, flat, outwardly semi-circular, placed in two rows.

Obs. In *A. meleagris* the nectary is oblong, and like *S. VESS.* smooth. *Lin.*

TU'LIPA. (TULIP. E.) *Tourn.* 199, and 200. *Gærtn.* 17.

CAL. none.

BLOSS. Bell-shaped. *Petals* six, egg-oblong, concave, up-right.

STAM. *Filaments* six, awl-shaped, very short. *Anth.* oblong, four-cornered, upright, distant, (versatile. E.)

PIST. *Germen* large, oblong, cylindrical, but with three blunt angles. *Style* none. *Summit* three-lobed, triangular; angles protuberating, cloven, permanent.

- S. VESS.** *Capsule* three-cornered, with three cells and three valves.
Valves egg-shaped, fringed at the edges.
SEEDS numerous, flat, semi-circular, lying one upon another in double rows, (many of them abortive. E.)

ORNITHOGALUM. (STAR OF BETHLEHEM. E.) *Tourn.*
 203. *Gärtn.* 17. (Sm. E.)

CAL. *Cup* none.

BLOSS. *Petals* six, spear-shaped, upright below the middle, expanding and flat above, permanent, but fading.

STAM. *Filaments* six, upright, alternately broader at the base, shorter than the blossom, (attached to the petals. E.) *Anthers* (terminal, versatile, shortened after the pollen is shed. E.)

PIST. *Germen* angular, (furrowed. E.) *Style* awl-shaped, permanent. *Summit* blunt.

S. VESS. *Capsule* roundish, angular, with three cells, and three valves.
SEEDS many, roundish.

OBS. The filaments in some species are upright and flat, every other filament having three points, and the anther fixed upon the middle point. In other species these alternate filaments are undivided. (Mr. Salisbury has constituted a new genus of *O. luteum* and several exotic species chiefly resting on the character of the Inflorescence, which he thinks sufficient to distinguish it from all the neighbouring genera with a hypogynous corolla, or germen superum. He proposes to call this genus *Gagea*, in compliment to Sir Thomas Gage, Bart. F. L. S.—E.)

(**SCILLA.** *SQUILL.* E.) *Tourn.* 196. Lilio-Hyacinthus.

CAL. *Cup* none.

BLOSS. *Petals* six, egg-shaped, more or less expanding, deciduous, or shrivelling.

STAM. (to whose bases they are attached. E.) *Filaments* six, thread-shaped, half as long as the petals. *Anthers* oblong, fixed sideways, incumbent.

PIST. *Germen* roundish. *Style* simple, shorter than the stamens, deciduous. *Summit* simple.

S. VESS. *Capsule* nearly egg-shaped, smooth, with three furrows, three cells, and three valves.

SEEDS several, roundish.

(**OBS.** With many other botanists Count Hoffmannsegg and Professor Link, (aware of the insufficiency of the Linnæan characters of *Scilla* and *Ornithogalum*.) have attempted to point out less ambiguous distinctions, by referring to the nature of the petals. The species of the genus *Scilla* have petals with a longitudinal nerve running along the middle, with very minute and scarcely visible accessory nerves; the segments in *Ornithogalum*, on the other hand, are furnished with several rather strong nerves adjoining each other, and their lower surface is commonly green, a circumstance never observed in *Scilla*.—Annals of Botany. v. 1.—E.)

(HYACINTHUS. HYACINTH. *Linn. Gen.* 170. *Tourn.* 180.

CAL. none.

BLOSS. inferior, of one *petal*, deciduous; *tube* somewhat bell-shaped, or globose; *limb* in six deep, regular, reflexed segments, shorter than the tube. "Nectary three pores upon the germen." *Linn. Juss.*

STAM. *Filaments* awl-shaped, equal, proceeding from the tube, and inclosed within it. *Anthers* oblong, converging.

PIST. *Germen* superior, roundish, with three angles, and three furrows, *Style* simple, erect, shorter than the tube, deciduous. *Summit* obtuse.

S. VESS. *Capsule* roundish, with three rounded angles, or three lobes, three cells, and three valves, with central partitions.

SEEDS few, globose.

Obs. The monopetalous corolla distinguishes this genus from *Scilla*. *Sm. Eng. Fl. E.*)

ANTHERICUM. (SPIDER-WORT. E.) *Tourn.* 193. *Phalangium. Gærtn.* 16. (*Sm. E.*)

CAL. *Cup* none.

BLOSS. *Petals* six, oblong, blunt, greatly expanded.

STAM. *Filaments* six, awl-shaped, upright. *Anthers* small, with four furrows, fixed sidewise to the filaments, (*versatile. E.*)

PIST. *Germen* with three obtuse angles. *Style* simple, as long as the stamens. *Summit* blunt, triangular.

S. VESS. *Capsule* egg-shaped, smooth, with three furrows, three cells, and three valves: (abrupt, or concave, at the summit, and crowned with the style. *E.*)

SEEDS numerous, angular.

Obs. *A. calyculatum*, (*Tofieldia palustris* of recent authors,) has a calyx with three teeth, and three pistils, but with scarcely any distinct styles. *Linn.*

NARTHECIUM. (BOG-ASPENDEL. E.) *Moehr. Huds.* (*Sm. E.*)

CAL. *Cup* none.

BLOSS. *Petals* six, equal, spear-shaped, acute, widely expanding, permanent, (ribbed, membranous at the edges; three of them interior; all finally hardened, and converging round the capsule. *E.*)

STAM. *Filaments* six, awl-shaped, woolly. *Anthers* small, fixed sidewise, (finally twisted. *E.*)

PIST. (*Germen* oblong, triangular, tapering upwards into a short, conical style. *E.*) *Summit* blunt.

S. VESS. *Capsule* egg-shaped, acute, three-cornered, with three cells and three valves.

SEEDS numerous, chaff-like, (each invested with a membranous tunic, tapering at each end, equalling the whole capsule in length. *E.*)

OBS. This is *Anthericum ossifragum* of Linnæus, who was well aware that it did not properly coincide with some of its congeners. Moehringius, and after him Hudson, made it a distinct genus, which has been since adopted by other Botanists. It differs from *Anthericum* in having a permanent blossom, woolly filaments, cylindrical seeds tapering to a point each way, and ending in a long thread-like appendage.

ASPARAGUS. (ASPARAGUS. E.) *Tourn.* 154. *Gærtn.* 16.
(Sm. E.)

CAL. *Cup* none.

BLOSS. *Petals* six, oblong, permanent, connected by the claws into an upright tube. The three inner petals alternate, reflexed at the top.

STAM. *Filaments* six, thread-shaped, standing on the petals, upright, shorter than the blossoms. *Anthers* roundish, (erect. E.)

PIST. *Germen* turban-shaped, with three corners. *Style* very short, (with three furrows. E.) *Summit* a prominent point, (in three spreading lobes, deciduous.)

S. VESS. *Berry* globular, with three cells, (and subtended by the shrivelled blossoms. E.)

SEEDS two, smooth, globose, but angular on the inside, (with a horny *albumen* and a transverse *embryo*, far out of the centre. E.)

OBS. It is not easy to determine whether the blossom be composed of one petal or of six. The flowers are pendent, though the pistil is very short. Flowers either male or female, or hermaphrodite. Seeds from one to three.

CONVALLARIA. (LILLY OF THE VALLEY. SOLOMON'S SEAL. E.) *Tourn.* 14. *Lilium Convallium* and *Polygonatum.* *Gærtn.* 16.

CAL. *Cup* none.

BLOSS. one *Petal*, bell-shaped, smooth, (deciduous. E.) *Border* with six clefts, *segments* blunt, expanding and reflexed.

STAM. *Filaments* six, awl-shaped, standing on the petal, shorter than the blossom. *Anthers* oblong, upright, (cloven. E.)

PIST. *Germen* globular. *Style* thread-shaped, longer than the stamens, (swelling upwards. E.) *Summit* blunt, three-cornered.

S. VESS. *Berry* globular, with one cell, but with three divisions at the base; spotted before it is ripe.

SEEDS one or two, roundish, (having a horny *albumen*; the *embryo* straight, opposite to the scar. E.)

OBS. In *C. majalis* the blossom is globular, but open and bell-shaped at its mouth; in the other British species it is tubular below and bell-shaped upwards. (Dr. Smith remarks, that the undivided summit chiefly distinguishes this genus from *Asparagus.* E.)

ACORUS. (SWEET-FLAG. E.) *Leers* 13. f. 12.

CAL. *Spike-stalk* cylindrical, undivided, covered by sessile *stamens*. *Sheath* none. *Cup* none.

BLOSS. *Petals* six, blunt, concave, flexible, thicker upwards, and almost lopped.

STAM. *Filaments* six, rather thick, somewhat longer than the petals. *Anthers* thick, terminating, double, connected.

PIST. *Germen* gibbous, oblong, as long as the stamens. *Style* none. *Summit* (hemispherical, obscurely, three-lobed, E.)

S. VESS. *Capsule* short, triangular, tapering each way, blunt, (membranous, of three cells, not bursting, E.)

SEEDS several, egg-oblong.

TAMUS. (LADY'S-SEAL. E.) *Tourn.* 28, Tamnus.

Male flowers.

CAL. *Cup* with six divisions. *Leaflets* egg-spear-shaped, expanding towards the top.

BLOSS. none.

STAM. *Filaments* six, simple, shorter than the cup. *Anthers* upright.

Female flowers.

CAL. *Cup* one leaf, with six divisions, bell-shaped, expanding. *Segments* spear-shaped, superior, deciduous.

BLOSS. *Petals* none.

Nectary an oblong dot at the base of each segment of the cup, on the inner side.

PIST. *Germen* beneath, egg-oblong, large, smooth. *Style* cylindrical, as long as the cup. *Summits* three, reflexed, notched at the end, acute.

S. VESS. *Berry* egg-shaped, with two cells.

SEEDS two, globular.

JUNCUS. (RUSH. E.) *Tourn.* 127. *Gærtn.* 15. (Sm. E.)

CAL. *Husk* two valves. *Cup* six leaves. *Leaflets* oblong, tapering to a point, permanent.

BLOSS. none, unless the young and coloured cup be considered such.

STAM. *Filaments* six, hair-like, very short. *Anthers* oblong, upright, as long as the cup, (bursting lengthwise, E.)

PIST. *Germen* three-cornered, tapering to a point. *Style* short, thread-shaped, (deciduous, E.) *Summits* three, long, thread-shaped, woolly, bent inwards.

S. VESS. *Capsule* covered, triangular, with one or three cells, and three (firm valves, with central partitions, E.)

SEEDS (numerous, minute, roundish, inserted all along the inner edge of each partition, often furnished with a partial tunic, E.)

Obs. Husks brown, or approaching to black, where it is not expressed to be otherwise. *J. conglomeratus* has only three stamens in each flower; (and *J. effusus* sometimes not more. E.)

(LUCIOLA. WOOD-RUSH. *Br. Pr.* 591. *Luzula*. *Bich.*
Linn. Trans. xii:329. *Juncus*. *Linn.*

CAL. inferior, of six oblong, acute, permanent leaves; three of them internal, and rather the smallest.

BLOSS. none.

STAM. *Filaments* capillary, very short, attached to the base of the calyx leaves. *Anthers* oblong, erect, of two cells, bursting lengthwise.

PIST. *Germen* superior, triangular, of one cell, with rudiments of three seeds only. *Style* simple, thread-shaped, deciduous. *Summits* three, tapering, downy, as long as the style, or longer.

S. VESS. *Capsule* ovate, triangular, smooth, subtended by the permanent calyx, of one cell, and three rather horny valves, with a longitudinal ridge along the middle of each.

SEEDS three, at the bottom of the capsule, erect, roundish, with a tumid crest, various in shape and position.

Obs. The establishment of this genus, so different in habit from *Juncus*, and now so well determined by the character of its capsule, and the number as well as insertion of its seeds, can hardly be controverted. The hairy heads of flowers, wet with dew, and sparkling by moon-light, gave the elegant Italians an idea of their *lycciole*, or glow-worm, sometimes written *luzziole*, but this is a corruption. Hence Bauhin got the name of *Gramen Luzula*, or *Glow-worm Grass*. *Sm. Eng. Fl.* E.*)

BERBERIS. (BARBERRY. E.) *Tourn.* 385. *Cærtn.* 42.

CAL. *Cup* six leaves, expanding; *leaflets* egg-shaped, narrowest at the base, concave, coloured, deciduous, alternately smaller.

BLOSS. *Petals* six, roundish, concave, upright, but expanding, scarcely larger than the cup.

Nectary two, roundish, coloured glands, attached to the base of each petal.

STAM. *Filaments* six, upright, compressed, blunt, opposite the petals. *Anthers* two, (lobed, opening by a valve from the bottom upwards. E.) adhering to each side of the filament, at the end.

PIST. *Germen* cylindrical, as long as the stamens. *Style* none. *Summit* round and flat, broader than the *germen*, encompassed by a thin edged border.

S. VESS. *Berry* cylindrical, blunt, dimpled, with one cell, (pulpy, opening at the top. E.)

SEEDS two or three, oblong, cylindrical, blunt, (attached by short stalks to the lower part of the cell. E.)

* (Vide Mr. Bicheno's very ingenious Essay on these Genera in *Linn. Trans.* v. xii. E.)

FRANKENIA, (SEA-HEATH. Sm. E.)

CAL. *Cup* one leaf, nearly cylindrical, permanent, (with five angles. E.) *Rim* with five acute teeth, standing out.

BLOSS. *Petals* five, the claws as long as the cup. *Border* flat, *limbs* of each circular and expanding.

Nectary a channelled membrane, attached, tapering to a point, to each claw of the petals.

STAM. *Filaments* six, as long as the cup. *Anthers* roundish, double.

PIST. *Germen* oblong, superior, (with three furrows. E.) *Style* simple, as long as the stamens. *Summits* three, oblong, upright, blunt. (downy. E.)

S. VESS. *Capsule* oval, of one cell, and three valves.

SEEDS numerous, egg-shaped, very small.

PE'PLIS. (PURSLANE. E.) *Gartn.* 51. (Sm. E.)

CAL. *Cup* one leaf, bell-shaped, very large, permanent. *Rim* with twelve teeth, every other tooth bent back.

BLOSS. *Petals* six, egg-shaped, very minute, inserted into the mouth of the cup.

STAM. *Filaments* six, awl-shaped, short, (incurved, alternate with the petals. E.) *Anthers* roundish.

PIST. *Germen* egg-shaped, (furrowed. E.) *Style* very short. *Summit* round and flat.

S. VESS. *Capsule* heart-shaped, (or globose. E.) *Cells* two, partition transverse.

SEEDS (numerous, minute, triangular, inserted into the central column. E.)

Obs. In the greater number of flowers on the same plant. the petals are altogether wanting.

DIGYNIA.

(OXYRIA. MOUNTAIN-SORREL. *Gartn.* 2. 180. Br. *Rosy. Voy. Hook. Scot.* 99. *Rumex. Linn.*

CAL. inferior, of two opposite, lanceolate, spreading, permanent leaves.

BLOSS. *Petals* two, alternate with the calyx-leaves, and larger, obovate, obtuse, erect, permanent.

STAM. *Filaments* six, awl-shaped, shorter than the calyx. *Anthers* erect, of two oblong lobes.

PIST. *Germen* superior, ovate, compressed, with-membranous edges; cloven at the summit. *Styles* one from each point of the germen; very short, erect. *Summits* in many fine, tufted segments.

SEED one, naked, ovate-oblong, compressed, with a dilated, nearly orbicular, flat, vertical, membranous, cloven, undulated wing; *embryo* central, straight. Sm. Eng. Fl. E.)

TRIGYNIA.

RU'MEX. (DOCK-SORREL. E.) *Tourn.* 287. *Acetosa.*

CAL. *Cup* three leaves. *Leaflets* blunt, reflexed, permanent.

BLOSS. *Petals* three, egg-shaped, not unlike the cup, but larger, approaching, permanent.

STAM. *Filaments* six, hair-like, very short. *Anthers* upright, (oblong, of two lobes. E.)

PIST. *Germen* turban-shaped, but (triangular segments. E.) *Styles* three, hair-like, reflexed, standing out between the petals. *Summits* large, jagged, with tufted tubercle.

S. VESS. none. The blossom approaching, and becoming triangular, contains the seed.

SEED single, three-sided, (polished. E.)

Obs. *R. acetosa* and *R. acetosella* have the stamens and pistils in different flowers and on distinct plants. In some species a callous grain is formed upon the outside of the petals, which close as valves upon the seed. Linn.

SCHEUCHZERIA. (SCHEUCHZERIA. E.) *Linn. Gen. Plant.*

CAL. *Cup* with six divisions; *leaflets* oblong, sharp-pointed, widely reflexed, permanent.

BLOSS. none.*

STAM. *Filaments* six, hair-like, very short, flaccid. *Anthers* upright, blunt, very long, flattened, (dependent, of two cells, opening at the inner side, by two lengthened, parallel, fissures. E.)

PIST. *Germens* three, egg-shaped, compressed, as large as the calyx. *Styles* none. *Summits* oblong, blunt at the top, growing to the outside of the germens.

S. VESS. *Capsules* as many as the germens, roundish, compressed, inflated, lying wide from each other, two-valved.

SEEDS solitary, oblong.

(Obs.) The number of germens and capsules varies from three to six, but is most frequently three. E.)

TOFIELDIA. (SCOTTISH ASPHODEL. E.) *Hb. Dan.* 36. *Huds.*

CAL. inferior, small, of one leaf, membranous, three cleft, permanent.

BLOSS. *Petals* six, equal, oblong, blunt, concave, permanent, many times longer than the calyx.

STAM. *Filaments* six, awl-shaped, smooth, as long as the petals. *Anthers* small, roundish, fixed sidewise.

* (Dr. Smith is inclined to think this flower ought to be considered as having a corolla rather than a calyx. E.)

PIST. (*Germens* three, triangular, pointed. E.) *Styles* three, awl-shaped, expanding, short. *Summits* blunt.

S. VESS. *Capsule* roundish, somewhat triangular, with three cells and six valves.

SEEDS numerous, oblong, nearly three-cornered, small.

Obs. Sir J. E. Smith describes this genus with three capsules; each of one cell and two valves, but Professor Hooker remarks that it ought rather to be considered as having one capsule with three cells, and that an examination of the germen, or unripe fruit, clearly shows the union of the three cells. F.) This is *Anthericum calyculatum* of Linnæus, who hinted the necessity of forming a distinct genus of it and *A. ossifragum*, but Hudson separated it from both, and with propriety; for though it has the habit of the latter, the structure of the seed-vessel will not allow them to associate in an artificial system.

TRIGLO'CHIN. (ARROW-GRASS. E.) *Tourn.* 142. *Jun-*
cago.

CAL. *Cup* three leaves; *leaflets* roundish, blunt, concave, deciduous.

BLOSS. *Petals* three, egg-shaped, concave, blunt, resembling the cup.

STAM. *Filaments* six, very short. *Anthers* six, shorter than the petals, (roundish, of two lobes. E.)

PIST. *Germen* large, (three or six furrowed. E.) *Styles* none. *Summits* three or six, reflexed, feathered.

S. VESS. *Capsule* egg-oblong, blunt, with as many cells as summits, opening at the base. *Valves* acute.

SEEDS solitary, oblong, (pointed, triangular. E.)

Obs. Though Linnæus has described both calyx and corolla to *Triglochin*, it is clear, from the intermediate insertion of the stamens, that this is erroneous. According to the principles by which we distinguish the calyx from the corolla, the integuments of the sexual organs of that genus ought to be considered as the former. Roth in *Annals of Botany*. E.)

COL'CHICUM. (MEADOW-SAFFRON. E.) *Tourn.* 181, 182.
Gærtn. 18.

CAL. none, (except some scattered sheaths.)

BLOSS. with six divisions. *Tube* angular, extending down to the root. *Segments* of the border spear-egg-shaped, concave, upright.

STAM. *Filaments* six, awl-shaped, shorter than the blossom. *Anthers* oblong, (of two cells and E.) four valves, fixed sidewise to the filaments.

PIST. *Germen* buried within the root. *Styles* three, thread-shaped, as long as the stamens. *Summits* reflexed, channelled, (downy. E.)

S. VESS. *Capsule* of three lobes, connected on the inside by a seam, blunt, with three cells, opening inwards at the seams.

SEEDS many, nearly globular, wrinkled.

(Obs. The capsule appears partially as three, and each with a single cell. E.)

HEXAGYNIA.

ARISTOLO'CHIA. (BIRTH WORT. E.) *Tourn.* 71. *Gertn.* 14.

CAL. *Cup* none, (ligulate, inflated at the base. E.)

BLOSS. *Petal* one. *Tube* cylindrical, but six-sided. *Border* spreading, extending into a long tongue.

STAM. *Filaments* none. *Anthers* six, growing to, and underneath the summits, with four cells in each.

PIST. *Germen* oblong, angular, beneath. *Style* obscure. *Summit* nearly globular, with six divisions, concave.

S. VESS. *Capsule* large, with six angles, and six cells.

SEEDS (numerous, compressed, attached laterally. E.)

OBS. The ripe capsule is either long or roundish. Linn.

POLYGYNIA.

ALIS'MA. (WATER-PLANTAIN. THRUM-WORT. E.) *Tourn.* 132. *Damasonium*.

CAL. *Cup* three leaves; *leaflets* egg-shaped, concave, permanent.

BLOSS. *Petals* three, circular, large, flat, greatly expanded, (deciduous. E.)

STAM. *Filaments* six, awl-shaped, shorter than the blossom. *Anthers* roundish.

PIST. *Germens* more than five. *Styles* simple. *Summits* blunt.

S. VESS. *Capsule* compressed, (externally rounded, as many as the germens. E.)

SEEDS solitary, small.

OBS. *A. Damasonium* has six pistils, and six capsules, tapering to a point. *A. natans* has generally eight. *A. plantago* has from twelve to eighteen capsules, and as many pistils.

CLASS VII.

HEPTANDRIA.

(Seven Stamens.)

MONOGYNIA (One Pistil.)

TRIENTA'LIS. (CHICKWEED. WINTER-GREEN. E.) *Gaertn.*
50. (Sm. E.)

CAL. Cup seven leaves; leaflets spear-shaped, tapering to a point, expanding, permanent.

BLOSS. starry, flat, of one petal with seven divisions, slightly adhering at the base. Segments egg-spear shaped.

STAM. Filaments seven, hair-like, growing on the claws of the blossom, standing wide, as long as the cup. Anthers simple, (terminal, oblong, recurved. E.)

PIST. Germen globular. Style thread-shaped, as long as the stamens. Summit a knob.

S. VESS. (Capsule, by many authors mistaken for a Berry, globose, of one cell, and seven elliptic-oblong valves, rarely fewer, shorter than the calyx, with obtuse, recurved, points. E.) dry, globular, of one cell, coat very thin, opening by various seams.

SEEDS several, angular, (each invested with a lax, white, membranous, reticulated, tunic: hitherto supposed to be the skin of a dry berry. E.) Receptacle large, (globose, cellular. E.)

OBS. Though seven be commonly the prevailing number in the genus, it is not always so. Stamens five, six, or seven. (The valves of the ripe capsule become concave externally; convex and polished within, and have been taken for a permanent blossom. But they are opposite to the calyx-leaves, which the segments of the blossom are not. Eng. Fl. E.)

CLASS VIII.

OCTANDRIA.

(Eight Stamens.)

MONOGYNIA (One Pistil.)

*Epilobium.**Vaccinium.**Erica.**Oenothera.**Menziesia.**Populus.**Acer.**Calluna.**Daphne.**Chlora.*

DIGYNIA (Two Pistils.)

Corylus.

TRIGYNIA (Three Pistils.)

Polygonum.

TETRAGYNIA (Four Pistils.)

*Paris.**Adoxa.**Elatine.**Quercus.**Rhodiola.**Myriophyllum.*

MONOGYNIA.

EPILOBIUM. (WILLOW-HERB. F.) *Tourn.* 157. *Chamaenerion*, *Gartn.* 31.

CAL. *Cup* one leaf, with four divisions, superior. *Segments* oblong, tapering to a point, coloured, deciduous.

BLOSS. *Petals* four, circular, expanding, broadest on the outer part, notched at the end, inserted between the divisions of the cup.

STAM. *Filaments* eight, awl-shaped, (from the throat of the cup, E.) alternately shorter. *Anthers* oval, compressed, blunt, (attached by the back, E.)

PIST. *Germen* beneath, cylindrical, (slightly quadrangular, E.) very long. *Style* thread-shaped. *Summit* with four clefts, thick, blunt, rolled back.

S. VESS. *Capsule* very long, cylindrical, scored, with four cells and four valves. *Partitions* opposite the valves.

SEEDS numerous, oblong, tufted with down. *Receptacle* very long, quadrangular, loose, pliant, coloured, connected with the partitions, containing the seeds in a double row.

Obs. In some species the stamens and pistils are upright, in others they incline to the lower side of the blossom. Linn.

OENO'THERA. (EVENING-PRIMROSE. E.) *Tourn.* 156.
Onagra.

CAL. *Cup* one leaf, superior, deciduous. *Tube* cylindrical, upright, long, deciduous. *Border* four-cleft; *segments* oblong, acute, rather expanding.

BLOSS. *Petals* four, inversely heart-shaped, flat, inserted into the divisions of the calyx and as long as its segments.

STAM. *Filaments* eight, awl-shaped, bowed inwards, placed on the mouth of the petals, shorter than the tube. *Anthers* oblong, peltate, fixed laterally.

PIST. *Germen* cylindrical, beneath, (furrowed. E.) *Style* thread-shaped, the length of the stamens. *Summit* four-cleft, thick, blunt, reflexed, rather angularly.

S. VESS. *Capsule* cylindrical, bluntly quadrangular, with four cells, and four valves.

SEEDS many, angular, beardless. *Receptacle* columnar, connected, quadrangular.

A'CER. (MAPLE. E.) *Tourn.* 386. (*Gærtn.* 116. *Sm.* E.)
Hermaphrodite flowers.

CAL. *Cup* one leaf, (flat and orbicular at the base, E.) with five clefts, acute, coloured, permanent.

BLOSS. *Petals* five, (resembling the segments of the cup, and alternating with them, E.) expanding.

STAM. *Filaments* eight, awl-shaped, short, (inserted into the calyx. E.) *Anthers* simple. *Pollen* cross-shaped.

PIST. *Germen* (two-lobed, E.) compressed, nearly buried in a large perforated convex receptacle. *Style* thread-shaped, lengthening daily. *Summits* two, tapering to a point, slender, reflexed.

S. VESS. *Capsules* (same, E.) as many as the summits, (two or three,) united at the base, roundish, compressed, each terminated by a very large membranous wing.

SEEDS one or two, roundish; (*cotyledons* convolute. E.)
Male flowers.

CAL. BLOSS. STAM. as above.

PIST. *Germen* none. *Style* none. *Summit* clove.

Obs. At the first opening of the flower the summit only makes its appearance, and after some days the style protrudes. In *A. Pseudo-Platanus* the blossom is scarcely distinct from the cup, and the stamens are long.

In some flowers in the same umbel, the lower ones have anthers which do not shed their pollen: but the pistils bring forth perfect fruit, and the upper ones have anthers which do shed their pollen, but the pistils fall off and perish. Linn. (The divisions of the calyx, as well as the petals, vary in number, and the stamens accord with them. *Sm.* E.)

CHLO'RA. (YELLOW-WORT. E.) *E. Bot.* 60.

CAL. *Cup* eight leaves, permanent. *Leaves* strap-shaped, expanding.

BLOSS. one petal, salver-shaped. *Tube* shorter than the cup, investing the germen. *Border* with eight divisions, (rarely six. E.) *Segments* spear-shaped, spiral in the bud, longer than the tube, (lapping over each other. E.)

STAM. *Filaments* eight, (awl-shaped, E.) short, fixed to the mouth of the tube. *Anthers* strap-shaped, upright, shorter than the segments of the blossom.

PIST. *Germen* egg-oblong. *Style* cylindrical, $\frac{1}{2}$ long as the tube. *Summits* four, (or rather bi-partite, with the segments cloven. E.)

S. VESS. *Capsule* egg-oblong, of one cell, somewhat compressed, with two furrows, two valves; the sides of the valves inflexed.

SEEDS numerous, very small, (angular, minutely granulated. E.)

Obs. Nearly allied to the Gentians. Linn. (and so constituted by Jussieu. E.) In *C. perfoliata* the segments of the blossom lap over each other; the filaments are sometimes nine in number, with nine leaflets to the cup; and the summits shaped like a horse shoe.

VACCINIUM. (WORTLE-BERRY. BILBERRY. E.) *Tourn.* 377. *Vitis* Idææ; 431 *Oxycoccus.* *Gertn.* 28.

CAL. *Cup* very small, superior, permanent, (four-toothed. E.)

BLOSS. one petal, bell-shaped, with four clefts. *Segments* revolute.

STAM. *Filaments* eight, simple, inserted into the receptacle. *Anthers* bicornate, opening with a pore at each point.

PIST. *Germen* beneath. *Style* simple, longer than the stamens. *Summit* blunt.

S. VESS. *Berry* with four cells, globular, with a central depression.

SEEDS few, small, (angular. E.)

Obs. The parts of fructification are occasionally increased one-fourth in number. The calyx in *V. myrtillus* is very entire, in most of the other species with four clefts. The new blown blossom is hardly divided but in *V. oxycoccus* it is rolled back to the base, or rather four-petalled, and the stamens are sometimes ten.

(It has been justly remarked that *Vaccinium*, obviously of the *Erica* tribe, by its inferior germen, defies the received principles of natural classification. E.)

(MENZIESIA. MENZIESIA. *Sm. Pl. Ic.* 3^d 56. *Willd.* *Sp. Pl.* 2. 355. *Hook. Scot.* 230. *Andromeda.* Linn.

CAL. *Cup* inferior, of one leaf, more or less deeply four or five-cleft, permanent.

BLOSS. of one petal, inflated, nearly ovate, deciduous; *limb* in four or five small spreading, equal, segments.

STAM. *Filaments* eight or ten, thread-shaped, equal, shorter than the corolla, inserted into the receptacle. *Anthers* oblong, without horns or crest; cloven at the base; opening by two pores at the summit.

PIST. *Germen* superior, roundish, furrowed. *Style* erect, angular, rather longer than the stamens. *Summit* obtuse, with four or five small notches.

S. VESS. *Capsule* elliptic-oblong, with four or five furrows, and as many valves and cells opening from the top downward; partitions double, formed of the inflexed margin of the valves.

SEEDS numerous, small, oblong, acute, affixed to the ribs of a large central column. Sm. Eng. Fl. E.)

(**CALLUNA.** LING. *Salisb. Linn. Tr. v. 6. Hook. Scot. 116. Grev. Edin. 88. Erica. Linn.*

CAL. inferior, permanent, double; *outermost* of four ovate-oblong, thick, blunt fringed leaves; *inner* of four elliptic-lanceolate, concave, coloured, polished leaves, concealing the blossom.

BLOSS. of one *petal*, bell-shaped, four-cleft, erect, much shorter than the inner calyx.

STAM. *Filaments* from the receptacle, thread-shaped, short, curved. *Anthers* terminal, erect, lanceolate, acute, with two lateral, oblong, orifices, each combined, before the discharge of the pollen, with the similar orifice of its neighbour at each side; the base bearing two deflexed bristles.

PIST. *Germen* superior, orbicular, depressed, furrowed. *Style* nearly erect, cylindrical, the length of the inner calyx. *Summit* capitate, with four notches.

S. VESS. *Capsule* concealed, by the inflexed, permanent, inner calyx, orbicular, a little depressed, with four furrows, four simple valves, and four cells; the partitions simple, flat, alternate, and unconnected with the valves, fixed vertically to a large ovate, fitted, permanent, central column.

SEEDS numerous, small, elliptic-oblong, dotted, attached to the column.

Obs. The generic distinctions were first pointed out by Mr. Salisbury. Gærtner indeed was struck with the peculiar construction of the capsule; yet considers this plant as ~~the~~ type of *Erica*, not aware perhaps that no other supposed *Erica* has been found to have such a capsule, or indeed such a calyx. Sm. Eng. Fl. E.)

ERICA. (JEATH. E.) *Tourn. 373. a. Gærtn. 63.*

CAL. *Cup* with four leaves; *leaflets* egg-oblong, permanent.

BLOSS. one *petal*, bell-shaped, (or ovate-oblong, E.) with four clefts, often ventricose.

STAM. *Filaments* eight, capillary, rising from the receptacle. *Anthers* cloven, (opening by lateral orifices, which adhere to those of the next anther 'till the pollen is discharged. E.)

PIST. *Germen* roundish. *Style* thread-shaped, straight, longer than the stamens. *Summit* a four-cleft coronet, with four clefts, four edges.

S. VESS. *Capsule* roundish, invested, smaller than the cup, with four cells, four valves, (and four furrows. E.)

SEEDS numerous, very small.

Oss. (It has been remarked by M. Thouin that the Heaths are in their native country naturally more short-lived than most plants with woody stems, the term of life of far the greater part being limited to a space of from six to ten years. *Annals of Botany.* E.)

POPULUS. (POPLAR. E.) *Tourn.* 365.

Male flowers.

CAL. *Catkin* oblong, loosely tiled, cylindrical, consisting of scales, inclosing a single flower, oblong, flat, ragged at the edge.

BLOSS. *Petals* none.

Nectary one leaf, turban-shaped beneath, tubular, ending at the top obliquely, in an egg-shaped border.

STAM. *Filaments* eight, extremely short. *Anthers* four-edged, large.

Female flowers.

CAL. *Catkin* and *Scales* as above.

BLOSS. *Petals* none.

Nectary as above.

PIST. *Germen* egg-shaped, but tapering to a point. *Style* hardly discernible. *Summit* cloven into four.

S. VESS. *Capsule* egg-shaped, with two cells. *Valves* two, reflexed.

SEEDS numerous, egg-shaped, downy.

DAPHNE. (MEZERION. SPURGE-LAUREL. E.) *Tourn.* 366. *Thymelæa.* *Gærtn.* 39.

CAL. *Cup* none: (by some authors the petals are so considered. E.)

BLOSS. one petal, channel-shaped, shrivelling, inclosing the stamens.

Tube cylindrical, closed, longer than the border. *Border* with four clefts. *Segments* egg-shaped, acute, flat, expanding, (coloured. E.)

STAM. *Filaments* eight, short, inserted about the middle of the tube, four of them alternately lower than the others. *Anthers* upright, roundish, with two cells, (contained within the tube. E.)

PIST. *Germen* egg-shaped. *Style* very short. *Summits* capitate, flat, but somewhat depressed.

S. VESS. *Berry* of one cell, oval.

SEED solitary, globular, fleshy, (with a thin skin, large, pendulous. E.)

DIGYNIA.

CORYLUS. (HAZEL. E.) *Tourn.* 347. *Gærtn.* 89.

Male flowers forming a long catkin.

CAL. *Catkin* Common, tiled, on every side, cylindrical, consisting of *Scales*, each inclosing a single flower, narrower at the base, broader and more blunt at the end, bent inwards, with three clefts. The

Middle Segment as long, but twice as broad, as the others, and covering them.

BLOSS. none.

STAM. *Filaments* eight, very short, fixed to the inner side of the scale of the cup. *Anthers* egg-oblong, shorter than the cup, upright.

Female flowers remote from the others, on the same plant, sessile, inclosed in the bud.

CAL. *Involucrum* one leaf, fleshy below, turgid upwards, two-lipped and torn at the edge, containing one flower.

Cup indistinct, superior, encircling the styles below.

BLOSS. none.

PIST. *Germen* roundish, very small, with the rudiments of two seeds.

Styles two, bristle-shaped. *Summits* awl-shaped.

S. VESS. none.

SEED. (*Nut* egg-shaped, in its general surface smooth, but as if rasped at the base, compressed towards the end, and tapering to a point; one-celled, invested with the coriaceous calyx. E.)

Obs. Nearly allied to *Carpinus*. Linn.

TRIGYNIA.

POLY'GONUM. (PERSICARIA. BISTORT. BUCK-WHEAT. SNAKE-WEED. E.) *Tourn.* 290^o and 291. *Bistorta*. (Persicaria, Fagopyrum. Sm. E.)

CAL. *Cup* turban-shaped, with five divisions, coloured within. *Segments* egg-shaped, blunt, permanent.

BLOSS. none, unless the cup be so considered.

STAM. *Filaments* generally eight, (sometimes fewer, E.) awl-shaped, very short. *Anthers* roundish, fixed, sideways, (incumbent. E.)

PIST. *Germen* (triangular, or compressed. E.) *Styles* generally three, (in those with a compressed germen only two, E.) thread-shaped, very short. *Summits* awl-shaped.

S. VESS. none. The *Cup* laps round the seed.

SEED (solitary, triangular, or compressed, pointed, invested in the closed calyx. E.)

TETRAGYNIA.

PA'RI'S. (HERB PARIS. E.) *Tourn.* 117. *Herba Paris*.

CAL. *Cup* four leaves, permanent; *leaflets* spear-shaped, acute, as large as the blossom, expanding.

BLOSS. *Petals* four, expanding, awl-shaped, resembling the cup, (but narrower, and alternate with it, E.) permanent.

STAM. *Filaments* eight, awl-shaped, short, beneath the anthers. *Anthers* long, attached by their backs to the middle of the filaments, (of two cells. E.)

PIST. *Germen* roundish, with four angles. *Styles* four, expanding, shorter than the stamens. *Summits* simple, (downy on the upper side. E.)

S. VESS. *Berry* globular, with four blunt angles, and four cells.

SEEDS several, (attached in two rows to a central receptacle. E.)

ADOX'A. (MOSCHATELL. E.) *Tourn.* 68. *Moschatellina.*

CAL. *Cup* (partially beneath, about three-cleft, E.) flat, permanent.

BLOSS. one petal, with four clefts, flat. *Segments* egg-shaped, acute, longer than the cup.

STAM. *Filaments* eight, awl-shaped, as long as the cup. *Anthers* roundish.

PIST. *Germen* beneath the receptacle of the blossom. *Styles* four, simple, upright, as long as the stamens, (united at their base, E.) permanent. *Summits* simple.

S. VESS. *Berry* globular, (half invested by the calyx, pulpy in the centre, E.) of four cells.

SEEDS solitary, compressed.

Obs. Such are the characters of the terminal flowers; but the lateral ones have blossoms with five clefts, ten stamens, and five pistils. (Gærtner considers the berry to be more properly of one cell with four seeds. The germen has by some Botanists been deemed half superior. E.)

ELATINE. (WATERWORT. E.) *Faill.* l. f. 6. (Sm. E.)

CAL. *Cup* four (or three) leaves; *leaflets* roundish, (slightly concave, E.) as large as the blossom, permanent.

BLOSS. *Petals* (as many as the calyx-leaves, and alternating with them, E.) egg-shaped, blunt, sessile, expanding.

STAM. *Filaments* (double the number of, and about as long as, the petals. E.) *Anthers* simple.

PIST. *Germen* large, globular, depressed. *Styles* four, (or three,) upright, parallel, (short. E.) *Summits* simple.

S. VESS. *Capsule* large, globular, rather depressed, of four (or three) valves, (and as many cells. E.)

SEEDS several, crescent-shaped, upright, surrounding the central columnar receptacle like a wheel.

QUER'CUS. (OAK. E.) *Tourn.* 349. *Gærtn.* 37.

Male flowers.

CAL. *Cath.* thread-shaped, long, loose.

Cup one leaf, (bell-shaped, E.) commonly five cleft. *Segments* acute, often cleft.

BLOSS. none.

STAM. *Filaments* five to ten, very short. *Anthers* large, double.

Female flowers seated in a bud on the same plant.

CAL. *Involucrum*, *Scales* numerous, tiled, united at the base so as to form a little hemispherical, permanent, coriaceous cup, containing one flower; outer scales the largest.

Cup very small, (bell-shaped, E.) superior, with six clefts, permanent. *Segments* acute, contiguous to, and surrounding, the base of the style.

PIST. *Germen* beneath, very small, egg-shaped, with three cells, (two of them abortive, Hook, E.) and the rudiments of two seeds. *Style* simple, short, thickest at the base. *Summits* three, reflexed.

S. VESS. none.

SEED. *Nut* (acorn,) egg-cylindrical, coriaceous, smooth, as if rasped at the base, of one cell, (and one seed, E.) placed in an hemispherical bowl, tubercled on the outside, (the enlarged involucrum. E.)

RHODIOLA. (ROSE-WORT. K.) *Fl. Dan.* 183.

Male flowers.

CAL. *Cup* with *ten* divisions, concave, upright, blunt, permanent.

BLOSS. *Petals* four, oblong, blunt, upright but expanding, twice as long as the cup deciduous.

Nectaries four, upright, notched at the end, shorter than the cup.

STAM. *Filaments* eight, awl-shaped, longer than the blossom. *Anthers* simple.

PIST. *Germen* two oblong tapering to a point. *Styles* and *Summits* imperfect.

S. VESS. barren.

Female flowers.

CAL. *Cup* as above.

BLOSS. *Petals* four, wide, upright, blunt, equal in height to the cup, permanent.

Nectaries as above.

PIST. *Germens* four, oblong, tapering to a point, ending in straight simple *styles*. *Summits* blunt.

S. VESS. *Capsules* four, crooked, opening on the inner side.

SEEDS many, roundish.

Obs. Having been sometimes found with hermaphrodite flowers, with ten stamens, and five pistils in each, it might be associated with the *Sedums*, of whose general habit it very much partakes.

MYRIOPHYLLUM. (MILK-FOIL. L.) *Gærtn.* 68.

Male flowers.

CAL. *Cup* four leaves; *leaflets*, oblong, upright, the *outermost* the largest, the *innermost* the smallest.

BLOSS. none, or of four petals.

STAM. *Filaments* eight, hair-like, longer than the cup, flaccid. *Anthers* oblong.

Female flowers situated beneath the others.

CAL. *Cup* as above.

BLOSS. none, or of four petals.

PIST. *Germens* four, oblong. *Styles* none. *Summits* downy.

S. VESS. none.

SEEDS four, oblong, naked.

OBS. *M. verticillatum* often bears hermaphrodite flowers; *M. spicatum* seldom. Linn. (Hooker describes "Nuts four, subglobose, one-seeded." Gærtner observes, "Nuces duæ, aut frequentius quatuor." E.)

CLASS IX.

ENNEANDRIA.

(Nine Stamens.)

DIGYNIA. (Two Pistils.)

Mercurialis.

HEXAGYNIA (Six Pistils.)

Butomus. *Hydrocharis.*

DIGYNIA.

MERCURIALIS. (MERCURY. E.) *Tourn.* 308.

Male flowers.

CAL. *Cup* with three divisions. *Segments* egg-spear-shaped, concave, expanding.

BLOSS. none.

STAM. *Filaments* nine or twelve, capillary, straight, as long as the cup. *Anthers* globular, double.

Female flowers.

CAL. *Cup* as above.

BLOSS. none.

Neclaries two, awl-shaped pointed substances, one placed on each side the *germen*, and pressed into its furrows.

PIST. *Germen* roundish, compressed, with a hollow furrow on each side, rough with hairs. *Styles* two, reflexed, horned, rough with hair. *Summits*, acute, bent back.

S. VESS. *Capsule* roundish, purse-shaped, double, with two cells.

SEEDS solitary, roundish.

HEXAGYNIA.

BU'TOMUS. (FLOWERING-RUSH. E.) *Tourn.* 143. *Gærtn.* 19.

CAL. (none, E.) or *Involucrum* simple, of three leaves, short.

BLOSS. *Petals* six; circular, concave, shrivelling; alternately outside, smaller, and more acute.

STAM. *Filaments* nine, awl-shaped, six of them on the outside of the others. *Anthers* composed of two plates, (opening lengthwise, by two valves, the whole subsequently contracted into a heart-shaped figure. E.)

PIST. *Germens* six, oblong, (the point of each elongated, and tapering into a vertical style. E.) *Summits* simple.

S. VESS. *Capsules* six, oblong, taper pointed, upright, (of one cell, E.) and one valve, opening at the inner margin.

SEEDS numerous, oblong, cylindrical, blunt at each end, (furrowed, each with a narrow border on one side. E.)

HYDRO'CHARIS. (FROG-BIT. E.) *Curt.* 167.

Male flower.

CAL. *Sheath* of two leaves, oblong, inclosing three flowers.

Cup proper, of three leaves; *leaflets* egg-oblong, concave; membranous at the edge.

BLOSS. *Petals* three, circular, flat, large.

STAM. *Filaments* nine, awl-shaped, upright, disposed in three rows; (each filament in the central row protrudes an awl-shaped little pillar, resembling a style, or beak, from the inner side of the base. E.) The other two rows are connected at the base, so that the outer and inner filaments adhere together. *Anthers* simple.

PIST. *Germen* merely a rudiment, in the centre of the flower.

Female flowers.

CAL. *Sheath* none. *Flowers* solitary.

Cup as above, superior.

BLOSS. as above.

PIST. *Germen* beneath, roundish. *Styles* as long as the cup, compressed, cloven, and furrowed. *Summits* cloven, tapering to a point.

S. VESS. *Capsule* coriaceous, roundish, with six cells.

SEEDS numerous, very small, roundish.

CLASS X.

DECANDRIA.

(Ten Stamens.)

MONOGYNIA. (One Pistil.)

Monotropa.
*Pyrola.**Andromeda.**Arbutus.*

DIGYNIA. (Two Pistils.)

Chrysosplenium.
*Saponaria.**Saxifraga.*
*Dianthus.**Scleranthus.*

TRIGYNIA. (Three Pistils.)

Arenaria.
*Silene.**Cherleria.**Stellaria.*

PENTAGYNIA (Five Pistils.)

Cotyledon.
Agrostemma.
*Spergula.**Sedum.**Lychnis.**Oxalis.**Cerastium.*

MONOGYNIA.

MONOTROPA. (BIRD'S-NEST. E.) *Fl. Dan.* 232. (Sm. E.)

CAL. none; unless the five outermost coloured petals be considered as such.

BLOSS. *Petals* ten, oblong, nearly parallel but upright, separated towards the point, deciduous; the outermost, which are every other, gibbous at the base, concave, and containing honey.STAM. *Filaments* ten, awl-shaped, upright, simple, (shorter than the blossom. E.) *Anthers* (kidney-shaped, of one cell and two valves, or "bilabiate," according to Hooker. E.)PIST. *Germes* roundish, tapering to a point, (furrowed. E.) *Styles* cylindrical, the length of the stamens. *Stigma* (orbicular, peltate. E.)S. VESS. *Capsule* egg-shaped, blunt, (furrowed, with five cells and five valves. E.)

SEEDS numerous, (minute, oval, each enveloped in a membranous, reticulated *tunic*, or *arillus*, greatly elongated at both ends. E.)

Obs. Such are the generic characters of the terminal flowers; but if there be any lateral ones, they contain one-fifth less in number in all the parts. Linn.

ANDROM'EDA. (MARSH-CISTUS. E.) *Gærtn.* 63. (Sm. E.)

CAL. *Cup* with five divisions, acute, very small, coloured, permanent.

BLOSS. one petal, bell-shaped, with five clefts. *Segments* reflexed.

STAM. *Filaments* ten, awl-shaped, shorter than the blossom, to which they very slightly adhere. *Anthers* (incumbent, of two oval cells opening by two terminal pores, and bicornate. E.)

PIST. *Germen* roundish, (with five furrows. E.) *Style* cylindrical, longer than the stamens, permanent. *Summit* (obtus., notched. E.)

S. VESS. *Capsule* roundish, with five angles, five cells, and five valves, opening at the angles. *Partitions* opposite the valves.

SEEDS roundish, polished.

Obs. The blossom in some species is egg-shaped, but in others truly bell-shaped, and the anthers are either with or without awns. This genus differs from *Erica* in the number of the parts. Linn. In *A. Daboecia* one-fifth of the parts of fructification are wanting; therefore it is removed to the genus *Erica*, (now *Menziesia* E.)

AR'BUTUS. (STRAWBERRY-TREE. E.) *Tourn.* 368 and 370, *Uva Ursi.* *Gærtn.* 59. (Sm. E.)

CAL. *Cup* with five divisions, blunt, very small, permanent.

BLOSS. one petal, egg-shaped, flattened and transparent at the base; *mouth* with five clefts. *Segments* blunt, rolled-back, small.

STAM. *Filaments* ten, awl-shaped, but ventricose, very slender at the base, half as long as the blossom, attached edgewise to its base. *Anthers* (incumbent, of two oval cells, opening by two terminal pores, and bearing a pair of short horns, or spurs. E.)

PIST. *Germen* nearly globular, seated upon the receptacle, which is marked with ten dots. *Style* cylindrical, as long as the blossom. *Summit* rather thick and blunt.

S. VESS. *Berry* globular, of five cells.

SEEDS small, of a bony hardness; (angular. E.)

Obs. *A. uva ursi* has only one seed in each cell of the capsule, the other species have several. Linn.

PYROLA. (WINTER-GREEN. E.) *Tourn.* 132. *Gærtn.* 63. (Sm. E.)

CAL. *Cup* with five divisions, deep, small, permanent.

BLOSS. *Petals* five, circular, concave, expanding.

STAM. *Filaments* ten, awl-shaped, shorter than the blossom, (curved. E.) *Anthers* large, pendulous, (bicornate, of two cells, each opening by a round pore at the summit. E.)

PIST. *Germen* roundish, (five lobed, E.) angular. *Style* thread-shaped, longer than the stamens, permanent. *Summit* rather thick, (notched. E.)

S. VESS. *Capsule* globular, depressed, with five angles, five valves, and five cells, opening at the angles. *Partitions* opposite to the valves.

SEEDS numerous, (each enveloped in a membranous *tunic*, or *arillus*, elongated at both ends. E.)

OBS. In some species the stamens and styles are upright, in others leaning to one side, and in others again expanding. The shape of the summit also varies in different species.

DIGYNIA.

CHRYSOSPLENIUM. (SENGREEN. GOLDEN-SAXIFRAGE. E.) *Tourn.* 60. *Gærtn.* 44.

CAL. *Cup* with four or five divisions, expanding, coloured, permanent. *Segments* egg-shaped, the opposite ones narrowest.

BLOSS. none, unless the coloured cup be so considered.

STAM. *Filaments* eight or ten, awl-shaped, upright, very short, standing upon the angular receptacle. *Anthers* simple.

PIST. *Germen* beneath, (roundish, E.) terminating by two awl-shaped *styles*, as long as the stamens. *Summits* blunt.

S. VESS. *Capsule* with two beaks, (constituted by the permanent styles, E.) of one cell, and two half valves, encompassed by the green calyx.

SEEDS numerous, small, (shining. E.)

OBS. The terminating flower has five clefts, the others, which expand later, have only four. It has a very close affinity to *Saxifraga*, but by no principle of arrangement can they be united into one genus. *Linu.* (Smith describes the anthers as having two lobes. E.)

SAXIFRAGA. (SAXIFRAGE. E.) *Tourn.* 129. *Gærtn.* 26. (Sm. E.)

CAL. *Cup* one leaf, with five divisions, short, acute, permanent.

BLOSS. *Petals* five, expanding, narrow at the base, (attached to the calyx. E.)

STAM. *Filaments* ten, awl-shaped, (attached to the calyx. E.) *Anthers* (of two round lobes. E.)

PIST. *Germen* roundish, terminating in two short *styles*. *Summits* blunt, (mostly downy. E.)

S. VESS. *Capsule* somewhat egg-shaped, with two beaks (formed of the permanent styles. E.)

SEEDS numerous, minute, (compressed. E.)

Obs. In some species the germen is beneath, in others, it is above. After the flower is open, two of the stamens opposite to each other bend down to the summits, and discharge their pollen perpendicularly over them. The next day two others bend down, and this process is continued until they have all done the same.

SCLERANTHUS. (KNAWEI. E.) *Fl. Dan.* 504.

CAL. Cup one leaf, tubular, (ribbed at the base, E.) with five shallow clefts, acute, permanent, contracted at the neck.

BLOSS. none.

STAM. Filaments ten, (inserted upon the calyx, E.) awl-shaped, upright, very small. Anthers roundish, (of two lobes, E.)

PIST. Germen roundish. Styles two, upright, thread-shaped, as long as the stamens. Summits simple, (downy, E.)

S. VESS. none.

SEED single, egg-shaped, covered by the gristly tube of the calyx.

(Obs. Five of the stamens are frequently abortive, or entirely deficient. E.)

SAPONARIA. (SOAPWORT. E.) *Curt.* ii. 17.

CAL. Cup one leaf, tubular, naked at the base, with five teeth at the summit, permanent.

BLOSS. Petals five. Claws narrow, angular, as long as the cup. Border flat; limbs broader towards the end, blunt.

STAM. Filaments ten, awl-shaped, as long as the tube of the blossom, attached alternately to the claws of the petals; five of them maturing their pollen later than the others. Anthers oblong, blunt, attached sideways, (incumbent, E.)

PIST. Germen somewhat cylindrical. Styles two, straight, parallel, as long as the stamens. Summits acute, (downy on one side, E.)

S. VESS. Capsule oblong, of one cell, covered by the cup, (opening with four teeth, E.)

SEEDS numerous, (roundish, kidney-shaped, rather rough, E.) small. Receptacle (unconnected, columnar, E.)

Obs. The figure of the calyx varies in different species. Reich.

DIANTHUS. (PINK. SWEET-WILLIAM. E.) *Tourn.* 174, Caryophyllus.

CAL. Cup cylindrical, tubular, scored, permanent, with five teeth at the mouth, and encompassed at the base with about four imbricated, opposite scales.

BLOSS. Petals five. Claws as long as the cup, narrow, (angular, E.) attached to the receptacle. Limbs flat, broadest outwards, blunt, scalloped, (or notched, E.)

STAM. Filaments ten, awl-shaped, as long as the cup, expanding towards the top. Anthers oval-oblong, compressed, fixed sideways, (incumbent, E.)

PIST. *Germen* oval. *Styles* two, awl-shaped, longer than the stamens.

Summits recurved, tapering to a point, (downy on the upper side. E.)

S. VESS. *Capsule* cylindrical, covered (by the calyx, E.) of one cell, opening at the top (with four teeth. E.)

SEEDS many, compressed, roundish. *Receptacle* unconnected, quadrangular, columnar, only half as long as the seed-vessel.

OBS. In some species the styles are but little longer than the stamens; in others they are very long, but rolled back so as to render any bending down of the flower unnecessary. Linn. Scales at the base of the calyx sometimes only two, but they vary even in the same species.

TRIGYNIA.

(*Cucubalus baccifer*, hitherto the acknowledged representative of the genus in every British Flora, must now be omitted, the plant having been originally introduced by Dillenius on an erroneous report, as growing in Anglesca, (Mona), where it has never since been found, even by that accurate resident observer, Hugh Davies, F.L.S. E.)

SILE'NE. CATCHFLY. CAMPION. E.) *Fl. Dan.* 559. *Curt.* 206.

CAL. *Cup* one leaf, (tubular, often ventricose. E.) with five teeth, permanent.

BLOSS. *Petals* five. *Claws* narrow, as long as the cup, bordered; limb flat, blunt, frequently cloven, (involute in the bud. E.)

Nectary composed of two little teeth at the neck of each petal, and constituting a crown at the mouth of the tube.

STAM. *Filaments* ten, awl-shaped: the alternate ones attached to the claws of the petals, and maturing their pollen later. *Anthers* oblong.

PIST. *Germen* cylindrical. *Styles* three, simple, longer than the stamens. *Summits* (oblique, partially downy. E.)

S. VESS. *Capsule* cylindrical, covered by the calyx, (imperfectly three-celled. E.) opening at the top with five or six teeth.

SEEDS many, kidney-shaped, (roughish, stalked. E.)

OBS. The nectariferous crown of the blossom distinguishes this genus from *Cucubalus*. Linn. †

STELLA'RIA. (STITCHWORT. E.) *Tourn.* 126, Alsine.

CAL. *Cup* five leaves. *Leaflets* egg-spear-shaped, concave, acute, upright, expanding, permanent.

BLOSS. *Petals* five, deeply cloven, flat, oblong, shrivelling.

STAM. *Filaments* ten, thread-shaped, shorter than the blossom, (five alternate ones shortest. E.) *Anthers* roundish.

PIST. *Germen* globular. *Styles* three, hair-like, expanding. *Summit* obtuse, (downy. E.)

S. VESS. *Capsule* egg-shaped, covered (by the calyx and shrivelled blossom, E.) with one cell and six valves. (opening with six teeth. E.)

SEEDS numerous, roundish, compressed.

ARENARIA. (SANDWORT. E.) *Curt.* 268 and 272. (Sm. E.)

CAL. *Cup* five leaves. *Leaflets* oblong, pointed, expanding, permanent.

BLOSS. *Petals* five, egg-shaped, entire.

(*Nectary* composed of five or ten glands at the base of the stamens. E.)

STAM. *Filaments* ten, awl-shaped, (alternately less prominent from immaturity. E.) *Anthers* roundish.

PIST. *Germen* egg-shaped. *Styles* three, a little reflexed. *Summits* rather thick, (downy. E.)

S. VESS. *Capsule* egg-shaped, covered (by the calyx and shrivelled blossom, E.) with one cell, and three or six valves.

SEEDS numerous, kidney-shaped, (rather rough. E.)

Obs. The number of stamens varies, (from three to ten. E.)

CHERLERIA. (CYPRUS. E.) *Jac. Austr.* 284. *Hall.* 114. (Schreb. 775. E.)

CAL. five leaves. *Leaflets* spear-shaped, concave, equal.

BLOSS. *Petals* none; unless the calyx or nectaries be considered as such.

Nectaries five, (minute, cloven glands, arranged in a circle on the inside of five of the stamens, opposite to the calyx, E.)

STAM. *Filaments* ten, awl-shaped, alternately attached to the backs of the nectaries. *Anthers* simple, (roundish. E.)

PIST. *Germen* egg-shaped. *Styles* three, serpentine. *Summits* (niant. E.)

S. VESS. *Capsule* egg-shaped, cells three, valves three.

SEEDS two or three, kidney-shaped.

(**Obs.** Other authors describe the seeds as more numerous, and the capsule of one cell. E.)

PENTAGYNIA.

COTYLEDON. (NAVEL-WORT. E.) *Tourn.* 19. (Schreb. 788. E.)

CAL. *Cup* or leaf, with five clefts, acute, small.

BLOSS. one petal, bell-shaped, with five shallow clefts.

Nectary a concave scale at the exterior base of each germen.

STAM. *Filaments* ten, awl-shaped, straight, as long as the blossom.
Anthers upright, with four furrows.

PIST. *Germen*s five, oblong, rather tumid, terminating in awl-shaped styles, longer than the stamens. *Summits* simple, reflexed.

S. VESS. *Capsules* five, oblong, ventricose, pointed, each of one valve, opening lengthwise on the inner margin.

SEEDS numerous, small.

SEDUM. (STONECROP. E.) *Tourn.* 140. *Gærtn.* 65.
(Schreb. 789. E.)

CAL. *Cup* with five clefts, acute, upright, permanent.

BLOSS. *Petals* five, spear-shaped, pointed, flat, expanding.

Neclary five, each consisting of a small notched scale on the exterior base of each germen.

STAM. *Filaments* ten, awl-shaped, as long as the blossom, (expanding. E.) *Anthers* roundish.

PIST. *Germen*s five, oblong, each terminating in a slender style. *Summits* blunt.

S. VESS. *Capsules* five, expanding, pointed, compressed, notched at the base, opening along the inner margin.

SEEDS numerous, very small.

Obs. In several of the species the calyx has from five to seven clefts; the blossom from five to seven petals; the stamens vary from ten to twelve, and the pistils from five to six.

OXALIS. (WOOD-SORREL. E.) *Tourn.* 19, Oxys. *Gærtn.* 113. *(Schreb.* 794. E.)

CAL. *Cup* with five divisions, acute, very short, permanent.

BLOSS. (*Petals* five, much longer than the calyx, upright, blunt, connected laterally by their claws, notched at the end; spiral in the bud. E.)

STAM. *Filaments* ten, hair-like, upright, the outer ones the shortest. *Anthers* roundish, furrowed, (incumbent. E.)

PIST. *Germen*s with five angles. *Styles* five, thread-shaped, as long as the stamens. *Summits* blunt, (downy. E.)

S. VESS. *Capsules* with five angles, five cells, and ten valves, membranous, bursting lengthwise at the angles.

SEEDS nearly round, (smooth, E.) covered by a fleshy elastic seed-coat.

Obs. In some species the capsule is short, and the seeds solitary; in others it is long, and the seeds numerous; and in others the filaments are united at the base. Lim.

AGROSTEMMA. (COCKLE. E.) *Curt.* 209. *Schreb.* 795.
(Sm. E.)

CAL. *Cup* one leaf, coriaceous, tubular, with five teeth, permanent, (strongly ribbed. E.)

BLOSS. *Petals* five; *claws* as long as the tube, of the cup; *limb* expanding, blunt.

STAM. *Filaments* ten, awl-shaped, each alternate stamen maturing its pollen later, inserted into the claws of the petals. *Anthers* simple, (notched at the end. E.)

PIST. *Germen* egg-shaped. *Styles* five, thread-shaped, upright, as long as the stamens. *Summits* slender, (downy. E.)

S. VESS. *Capsule* oblong-egg-shaped, covered (by the indurated calyx. E.) of one cell and five (rigid, E.) valves.

SEEDS many, kidney-shaped, granulated. *Receptacles* equal in number to the unconnected seeds, the inner ones gradually elongated, (or, according to the view of some other Botanists, "seeds stalked, attached to the unconnected central column." E.)

OBS. Blossom not crowned (with rigid sharp teeth at the mouth, E.) in *A. Githago*, as it is in other species.

LYCHNIS. (CAMPION. E.) *Tourn.* 175. (*Schreb.* 796. E.)

CAL. *Cup* one leaf, oblong. (ribbed, E.) membranous, with five teeth, permanent.

BLOSS. *Petals* five; *claws* as long as the tube of the cup, flat, bordered, (membranous at the edge, mostly crowned at the mouth, E.) *limb* flat, frequently cloven.

STAM. *Filaments* ten, longer than the cup, alternately ripening later, and attached to the claws of the petals. *Anthers* fixed sidewise, (oblong, incumbent. E.)

PIST. *Germen* nearly egg-shaped. *Styles* five, awl-shaped, longer than the stamens. *Summits* downy, reflexed.

S. VESS. *Capsule* approaching to egg-shaped, covered, of one, three, or five cells, and five valves.

SEEDS many, roundish, (rather rough. E.)

OBS. *L. dioica* has male and female flowers on different plants: the capsule has one cell, and ten (tooth-like, E.) valves at its top. In *L. viscaria* the petals are undivided, and the capsule has five cells. Linn.

CERASTIUM. (MOUSE-EAR CHICKWEED. E.) *Tourn.* 126, *Myosotis.* (Sm. E.)

CAL. *Cup* five leaves. *Leaflets* egg-spear-shaped, acute, expanding, permanent, (membranous at the edges. E.)

BLOSS. *Petals* five, cloven, blunt, upright, but expanding, as long as the cup; (with broad, very short claws. E.)

STAM. *Filaments* ten, thread-shaped, shorter than the blossom, alternate ones shortest. *Anthers* roundish, (two-lobed. E.)

PIST. *Germen* egg-shaped, (sessile. E.) *Styles* five, hair-like, upright, as long as the stamens. *Summits* blunt, (downy. E.)

S. VESS. *Capsule* egg-cylindrical, or globular, blunt, of one cell, opening at the top, (with twice as many upright teeth as there are styles. E.)

SEEDS many, roundish, (rough. E.)

Obs. *C. semi-decandrum* has only five stamens in each flower. The species are subdivided into such as have oblong, and such as have globular capsules. (In *C. tetrandrum* the stamens are generally four, rarely five, and the styles only four. E.)

SPERGULA. (SPURGEY. E.) *Curt.* v. 52, and 262. *Schreb.* 798. (Sm. E.)

CAL. *Cup* five leaves. *Leaflets* egg-shaped, blunt, concave, expanding, permanent.

BLOSS. *Petals* five, egg-shaped, concave, expanding, entire, larger than the cup, (undivided, with very short claws. E.)

STAM. *Filaments* ten, awl-shaped, shorter than the blossom. *Anthers* roundish, (two-lobed. E.)

PIST. *Germen* egg-shaped. *Styles* five, upright, but reflexed, thread-shaped. *Summits* rather thick, (downy. E.)

S. VESS. *Capsule* egg-shaped, (membranous, E.) covered (with the permanent calyx, E.) of one cell and five (connected, E.) valves.

SEEDS numerous, globular, but compressed, encompassed by a notched border.

Obs. This genus is distinguished from *Cerastium* by its undivided petals. *S. pentandra* has only five stamens.

CLASS XI.

DODÉCANDRIA.

THE name given to this Class might induce a supposition that the flowers arranged under it contain only twelve stamens; but it is in fact an assemblage of plants whose flowers contain from eleven to nineteen stamens, inclusive. Such as contain fewer than eleven, where the character depends upon number only, will be found in some of the preceding Classes, and such as have more than nineteen, in the Class Icosandria or Polyandria.

EUPHORBIA, or Spurge, is the most difficult genus in this Class, caused by the number of stamens being uncertain, those which do exist standing forth only a few at a time, and the effusion of milky juice which renders the dissection of the flowers not easy to accomplish. But by this milky juice, (which abounds in all our species,) and the peculiar habits of the plants, the young Botanist will soon learn to

distinguish the genus at first sight, and the different species by attending closely to the subdivisions, and to the following circumstances:

- Whether the { *Root* be annual, biennial, or perennial.
Stem be naked, cylindrical, or angular.
Leaves be opposite or alternate; and of what shape.
Umbel be general or partial; its divisions and subdivisions;
and the general and partial involucrems.
Flowers have only stamens, or both stamens and pistils.
Petals be entire, crescent-shaped, or hand-shaped, &c.
Capsule be hairy, warty, or smooth.

(A new, and probably more correct, view of the structure of this genus will be found further noticed at p. 249, though not yet generally adopted, by which this Dodecandrous hermaphrodite flower, will appear rather to be constituted of several Monandrous male flowers surrounding a single female, the development of the pistillum preceding that of the stamina in many species. E.)

DODECANDRIA. (Twelve Stamens.)

MONOGYNIA. (One Pistil.)

Asarum. *Ceratophyllum.* *Lythrum.*

DIGYNIA. (Three Pistils.)

Carpinus. *Agrimonia.*

TRIGYNIA. (Three Pistils.)

Fagus. *Reseda.* *Euphorbia.*
Castanea.

DODECAGYNIA. (Twelve Pistils.)

Sempervivum.

MONOGYNIA.

ASARUM. (ASARABACCÆ. E.) *Tourn.* 286. *Gertn.* 14.
(Sim. E.)

CAL. *Cup* one leaf, bell-shaped, with three or four shallow, coriaceous clefts, coloured, permanent. *Segments* upright, with the points curved in.

BLOSS. none.

STAM. *Filaments* twelve, awl-shaped, half as long as the cup. *Anthers* oblong, each of two round, distinct cells, attached to the middle of the filaments.

PIST. *Germen* either beneath, or concealed within the cup, (turbinate, E.) *Style* cylindrical, (furrowed, E.) as long as the stamens. *Sammit* stellated, with six reflexed divisions.

S. VESS. *Capsule* coriaceous, of six cells, inclosed within the substance of the cup.

SEEDS (several in each cell, obovate, with a pale longitudinal crest. E.)

CERATOPHYLLUM. (HORN-WEED. E.) *Gærtn.* 44.

Male flowers.

CAL. *Cup* with many divisions. *Segments* awl-shaped, equal.

BLOSS. none.

STAM. *Filaments* double the number of the segments in the cup, (sixteen to twenty,) scarcely discernible. *Anthers* oblong, upright, longer than the cup.

Female flowers on the same plant.

CAL. *Cup* as above.

BLOSS. none.

PIST. *Germen* egg-shaped, compressed. *Style* none. *Summit* blunt, oblique.

S. VESS. *Drupa* egg-shaped, pointed: coat thin.

SEEDS, *Nut* of one cell.

LYTHRUM. (PURPLE-LOOSESTRIFF. GRASSPOLY. E.)
Tourn. 129, *Salicaria.* *Gærtn.* 62. (Sm. E.)

CAL. *Cup* one leaf, cylindrical, striated, with twelve marginal teeth, alternately smaller.

BLOSS. *Petals* six, oblong, rather blunt, expanding, attached by the claws to the divisions of the cup.

STAM. *Filaments* twelve, thread-shaped, as long as the cup, (the six alternate ones shortest, and sometimes wanting; all incurved while young. E.) *Anthers* (roundish, incumbent. E.)

PIST. *Germen* oblong. *Style* awl-shaped, declining, the length of the longer stamens, (a little incurved. E.) *Summit* round and flat.

S. VESS. *Capsule* oblong, pointed, covered by the tube of the calyx, (membranous, E.) of two cells.

SEEDS numerous, small.

Obs. *L. hyssopifolia* has only six stamens.

DIGYNIA.

CARPINUS. (HORNBEAM. E.) *Tourn.* 348, *Gærtn.* 89.
(*Schreb.* 144, E.)

Male flowers.

CAL. *Catkin* cylindrical, loosely tiled on every side, consisting of *scales*, with a single flower in each, egg-shaped, concave, acute, fringed.

BLOSS. none.

STAM. *Filaments* ten or more, very short. *Anthers* double, compressed, woolly at the end.

Female flowers on the same plant.

CAL. *Catkin* loosely tiled, consisting of *scales*, inclosing a single flower; spear-shaped, woolly, reflexed at the end.

Involucrum of one leaf, egg-shaped, permanent, with six clefts. *Segments* unequal.

Cup very small, superior, with six unequal teeth.

PIST. *Germen* very small, two-celled, with the rudiments of two seeds. *Styles* very short. *Summits* two, hair-like.

S. VESS. none. The catkin enlarging contains the seed within the base of each scale.

SEED. *Nut* egg-shaped, compressed, covered by the permanent involucrum, which is egg-shaped, compressed, striated; *rim* with six clefts, two opposite teeth larger than the others.

AGRIMONIA. (AGREMONY. E.) *Tourn.* 155. *Gærtn.* 73.

CAL. *Cup* one leaf, (tubular, E.) with five clefts, acute, small, superior, permanent, surrounded (at its base by an echinated appendage, or bractea, E.)

BLOSS. *Petals* five, flat, notched at the end; *claws* narrow, attached to the cup.

STAM. *Filaments* hair-like, shorter than the blossom, arising from the cup. *Anthers* small, double, compressed.

PIST. *Germens* (two, sometimes three, in the bottom of the calyx, ovate, compressed, E.) *Styles* two, simple, as long as the stamens. *Summit* blunt.

S. VESS. none. The hardened tube of the cup closes over.

SEEDS two, (sometimes one, or three, compressed, ovate, pointed. E.)

Obs. The number of stamens exceedingly uncertain; in some flowers twelve, sometimes ten, frequently seven. In *A. eupatoria* the outer cup (bractea, E.) adheres to the inner one: the seeds are two, the stamens from twelve to twenty; the fruit surrounded by bristles. Linn. Stamens from five to twelve.

TRIGYNIA.

FA'GUS. (BEECH-TREE. E.) *Tourn.* 351. *Gærtn.* 37. 2.

Male flowers.

CAL. *Catkin* globose.

Cup one leaf, bell-shaped, with about six clefts.

BLOSS. none.

STAM. *Filaments* eight to twelve, as long as the cup, bristle-shaped. *Anthers* oblong.

Female flowers.

CAL. *Involucrum*, one leaf, with four clefts, upright, acute, prickly, permanent, inclosing two florets.

Cup of each floret, very small, superior, with six clefts, upright, acute, permanent.

BLOSS. none.

PIST. *Germen* somewhat three-cornered, three-celled, two of them becoming abortive. *Styles* three. *Summits* simple.

S. VESS. *Capsule* (heretofore the involucrem,) enlarged, roundish, beset with soft thorns, of one cell and four valves.

SEEDS. *Nuts* (one-seeded, egg-shaped, compressed, pointed. E.)

(CASTANEA. CHESNUT-TREE. *Gærtn.* 37. 1. *Ait. Hort. Kew.* *Hook. Scot.* *Grev. Edin.* *Fagus. Linn.*

Male flowers.

CAL. *Calkin* very long, cylindrical.

Cup single, one-leaved, six-cleft.

BLOSS. none.

STAM. *Filaments* five to twenty.

Female flowers.

CAL. *Involucrem* four-lobed, thickly mucicated, inclosing three florets.

Cup single, urecolate, five to six-lobed.

BLOSS. none.

PIST. *Germen* incorporated with the perianth, six-celled, with the cells two-seeded, five of them mostly abortive. *Styles* six, cartilaginous. *Summit* awl-shaped.

SEEDS. *Nut* one and two-seeded, invested with the enlarged, prickly, involucrem; convex on one side, flattish on the other.

Obs. 'Gartner having detected the rudiments of about twelve stamens in the fertile flower, denominates it hermaphrodite. E.)

RESEDA. (ROCKET. E.) *Tourn.* 238, and *Luteola. Gærtn.* 76.

CAL. *Cup* one leaf, (deeply, E.) divided. *Segments* narrow, acute, upright, permanent (two of them expanding more than the others. E.)

BLOSS. *Petals* several, unequal, some having three shallow clefts: the uppermost gibbous at the base, as long as the cup, and containing honey.

Nectary a flat, upright, (coloured, E.) gland, rising from the receptacle, situate between the stamens and the uppermost petal, closing with the base of the petals, which on that side are dilated.

STAM. *Filaments* eleven to fifteen, short. *Anthers* blunt, upright, as long as the blossom.

PIST. *Germen* gibbous, terminating in some very short styles. *Summits* simple, (blunt, E.)

S. VESS. *Capsule* gibbous, angular, tapering, (coriaceous, E.) of one cell, opening between the styles.

SEEDS numerous, kidney-shaped, adhering to the angles of the capsule.

Obs. A genus most difficult to characterize from the different species varying so greatly both in the figure and number of the parts of fructification. The Essential Character consists in petals with three clefts, one petal bearing the nectary in its base, and the capsules not closed, but always open. In *R. luteola* the cup has four divisions, the petals are three: the uppermost, containing the nectary, has six shallow clefts. The lateral and opposite petals have three clefts, and there are sometimes two other very small and entire petals. Styles three. Stamens many. Linn. (Mr. J. Lindley, in a splendid illustration of this genus, suggests that the flowers are aggregate or capitate, the central one only being perfect. E.)

EUPHORBIA. (SPURGE. E.) *Tourn.* 18, *Tithymalus*.

Cal. Cup one leaf, permanent, somewhat coloured, ventricose; *mouth* with four (and in a few species with five,) teeth.

Bloss. Petals four (in a few species five,) turbinate, gibbous, thick, lopped, irregularly situated, alternating with the teeth of the cup, and inserted by their claws upon its edge: permanent.

STAM. Filaments many, (twelve or more,) thread-shaped, jointed, standing on the receptacle, longer than the blossom, coming forth at different times. Anthers double; roundish.

Pist. Germen roundish, three-cornered, standing on a little pedicle. Styles three, cloven. *Summits* blunt.

S. VESS. Capsule roundish, consisting of three united berries and three cells, opening with a jerk.

SEEDS solitary, roundish.

Obs. Petals generally four, sometimes five, (by some authors denominated Nectaries. E.) Male and female flowers are often found on the same plant. Capsule either smooth, hairy, or verrucose. Linn.

(From recent discoveries respecting the structure of the plants of this genus, they are likely to assume a different station to that which they have hitherto held. The suggestion of Jussieu that what had generally been considered a single flower was in fact an Involucrum, including one central pistilliferous flower without anthers, and several anther-bearing monandrous ones: appears to be confirmed by the researches of Mr. Brown. See *Linn. Trans.* v. xii p. 99.

“Mr. Brown alone,” observes Sir J. E. Smith, “has asserted each barren flower to consist of a mere stamen, articulated with the partial stalk of the simplest of all flowers, there being no Corolla nor Perianth, the scales at the base being rather of the nature of Bracteas. The fertile flower in the centre is, in like manner, a naked Pistil, whose Germen is sessile on a similar stalk.” This opinion is proved, says the same author, by an unpublished genus, whose several flowers have each a lobed Perianth at the articulation above-mentioned.

Professor Hooker further remarks, “the number of stamens is by no means constant; nor do they all appear at once: a circumstance to be accounted for, now that we know that each stamen is in itself a distinct flower. The rays of the umbel too are variable, stamined specimens having fewer than are attributed to them in the specific character. The shape of the nectaries, leaves, and involucre, is more to be depended upon.” E.)

POLYGYNIA.

SEMPERVIVUM. (CYPHEL. HOUSE-LEEK. E.) *Tourn.*
140, *Sedum.* *Gartn.* 65.

CAL. *Cup* from six to twelve divisions, concave, acute, permanent.

BLOSS. *Petals* six to twelve, oblong, spear-shaped, acute, concave, a little larger than the cup.

STAM. *Filaments* six to twelve, awl-shaped, slender. *Anthers* roundish.

PIST. *Germens* six to twelve, placed in a circle, upright, each terminating in a style, expanding. *Summits* acute.

S. VESS. *Capsule* six to twelve, oblong, compressed, short, placed in a circle, tapering to a point outwardly, opening on the inner side.

SEEDS many, roundish, small.

Obs. When of luxuriant growth the numbers often increase, especially the number of the pistils. Nearly allied to *Sedum*, but differs in always having more than five petals.

CLASS XII.

ICOSANDRIA.

ALTHOUGH this is called the Class of TWENTY STAMENS, because the flowers arranged under it generally contain about that number; the Classic Character is not taken merely from the number of stamens, but from a consideration of the following circumstances, which will sufficiently distinguish it both from the preceding and ensuing Classes.

1. CALYX consisting of one leaf, concave.
2. PETALS fixed by claws to the inside of the calyx.
3. STAMENS more than nineteen; standing upon the petals, or upon the calyx; (not upon the *Receptacle*.)

Obs. Scarcely any of the plants of this Class are poisonous. The fruits are mostly pulpy and esculent. (The situation of the stamens on the rim of the petals or calyx, may be deemed a criterion of wholesome produce, and a sure guide to the adventurous experimentalist. E.)

ICOSANDRIA. (Twenty Stamens.)

MONOGYNIA. (One Pistil.)

Prunus.

DIGYNIA. (Two Pistils.)

Cratægus.

PENTAGYNIA. (Five Pistils.)

Mespilus.

Pyrus.

Spiræa.

POLYGYNIA. (Many Pistils.)

Rosa.

Rubus.

Fragaria.

Potentilla.

Tormentilla.

Geum.

Dryas.

Comarum.

MONOGYNIA.

PRUNUS. (PLUM-TREE. CHERRY-TREE. E.) *Tourn.* 398, and 301, *Cerasus.* (Sm. E.)

CAL. *Cup* one leaf, bell-shaped, with five clefts, deciduous. *Segments* blunt, concave.

BLOSS. *Petals* five, circular, concave, large, expanding, attached to the cup* by short claws.

STAM. *Filaments* twenty to thirty, awl-shaped, nearly as long as the blossom, standing on the rim of the calyx. *Anthers* double, short.

PIST. *Germen* superior, roundish. *Style* thread-shaped, as long as the stamens. *Summit* (orbicular, peltate. E.)

S. VESS. *Drupa*, nearly globular, pulpy, including a nut or stone.

SEED a *Nut*, somewhat globular, but compressed, (very hard, of one cell and two more or less distinct valves, prominent at the margin, with an intermediate furrow; kernel solitary, suspended from the top. E.)

OBS. The inside of the cup, in most of the species, is covered with a number of small glands, which make an appearance like hoar frost. St.—*P. instititia* has sometimes two pistils.

DIGYNIA.

CRATÆGUS. (HAWTHORN. E.) *Gærtn.* 87. *Oxyacantha.*

CAL. *Cup* one leaf, concave, but expanding, with five teeth, permanent.

BLOSS. *Petals* five, circular, concave, sessile, attached to the cup.

* (For some ingenious observations on the natural order of POMACEÆ, by Mr. John Lindley, F.L.S. see Linn, Trans. v. xiii. E.)

STAM. *Filaments* twenty, awl-shaped, fixed to the cup. *Anthers* roundish.

PIST. *Germen* beneath. *Styles* two, thread-shaped, upright. *Summit* knobbed.

S. VESS. *Berry* fleshy, (or mealy, E.) nearly globular, dimpled.*

SEEDS two, rather oblong, separate, gristly.

OBS. In *C. aria*, (now *Pyrus aria*.) the pistils vary from two to four. With us *C. monogyna* has uniformly only one pistil and one seed, (though, according to Mr. Lindley, rather fortuitously than absolutely, as arising from the abortion of one style. The same author observes, that in *Crataegus*, "the fruit is usually closed by the thickened disk and convenient divisions of the calyx," while in *Mespilus*, "the top of the cells is absolutely naked," and that *C. oxyacantha* in particular, in contradistinction to *Mespilus*, has seeds peltate. E.)

PENTAGYNIA.

MESPILUS. (MEDLAR-TREE. E.) *Tourn.* 410. *Gærtn.* 87.

CAL. *Cup* one leaf, concave, but expanding, with five teeth, permanent.

BLOSS. *Petals* five, circular, concave, attached to the cup.

STAM. *Filaments* twenty, awl-shaped, fixed to the cup. *Anthers* simple.

PIST. *Germen* beneath. *Styles* five, simple, upright. *Summits* roundish.

S. VESS. *Berry* (or rather (*pomum*) apple, E.) globular, with a deep cavity nearly pervading the upper half, but closed by the cup.

SEEDS five, hard as bone, gibbous.

OBS. *Crataegus*, *Sorbus*, and *Mespilus*, are so nearly allied, as scarcely to be distinguished otherwise than by the number of pistils. Of *Sorbus* (now included in the genus *Pyrus*, E.) the leaves are generally winged; of *Crataegus*, divided into segments, or angular; and of *Mespilus*, entire. *Linn.*—The number of styles variable. *Reich.*

(**PYRUS.** *Linn. Gen.* 251. *Tourn.* 404. *Gærtn.* 87. *Fl. Brit.* *Sorbus.* *Linn. Gen.* 250. *Juss.* 335. *Malus.* *Juss.* 334. *Tourn.* 406.

CAL. *Cup* superior, of one leaf, concave, in five deep, spreading, mostly permanent segment

BLOSS. *Petals* five, roundish, concave, much larger than the calyx, and proceeding from its rim, with short claws.

STAM. *Filaments* twenty, from the rim of the calyx within the petals, awl-shaped, shorter than the corolla. *Anthers* oblong, of two-lobes.

* (Not decidedly "open," as in the genus *Mespilus*; but comparatively closed; nor do we conceive that *C. oxyacantha* forms an exception. E.)

PIST. *Germen* inferior, roundish. *Styles* from two or three, to five, thread-shaped, about the length of the stamens. *Summits* simple, or bluntish.

S. VESS. *Apple* roundish, or somewhat oblong; umbilicated, fleshy, of as many cartilaginous or membranous bivalve cells as there are styles.

SEEDS two in each cell, erect, obovate, flattened on one side.

Obs. Gærtner first united the above Linnæan genera, including *Cydonia*. The cells of the fruit in *Pyrus* vary, even in one species, the Common Pear, from cartilaginous to membranous, and gradations in texture from one species to another are so insensible that they baffle all generic distinction. The bony cells of *Mespilus*, each of one piece, and not splitting asunder, perhaps sufficiently mark that genus. Sm. Eng. Fl. E.)

SPIRÆA. (DROP-WORT MEADOW-SWEET. E.) *Tourn.* 141, Ulmaria; 150, Filipendula. *Gærtn.* 69.

CAL. *Cup* one leaf, with five shallow clefts, flat at the base. *Segments* acute, permanent.

BLOSS. *Petals* five, oblong, but rounded, attached by claws to the rim of the cup.

STAM. *Filaments* more than twenty, thread-shaped, shorter than the blossom, fixed to the cup. *Anthers* roundish, (of two lobes. E.)

PIST. *Germens* five or more, compressed. E.) *Styles* the same number, thread-shaped, as long as the stamens. *Summits* somewhat globular.

S. VESS. *Capsules* oblong, pointed, compressed; each two-valved, (and one-celled, E.)

SEEDS few, tapering to a point, small, (pendulous from the outer margin of each valve. E.)

Obs. In *S. ulmaria* the capsules are numerous, and placed in a circle: in *S. filipendula* they are numerous, and twisted spirally. Linn.

POLYGYNIA.

ROSA. (ROSE. E.) *Tourn.* 403. *Gærtn.* 73. (Sm. E.)

CAL. *Cup* one leaf. *Tube* ventricose, narrow at the neck, (finally succulent; E.) *border* globular, with five divisions, expanding. *Segments* deep, egg-spear-shaped, (pointed, concave, imbricated; either all simple; or two of them pinnate with leafy appendages on both sides; one on one side only; the other two naked on both sides. E.)

BLOSS. *Petals* five, inversely heart-shaped, as long as the segments of the cup, (and attached by the broad claws to the rim of its tube, deciduous. E.)

STAM. *Filaments* numerous, hair-like, very short, rising from the rim of the cup. *Anthers* (roundish, flattened, of two oblong, tumid lobes. E.)

PIST. *Germens* numerous, (oblong, lining the tube of the calyx, interspersed with dense, silky hairs. E.) *Styles* one to each germen, (lateral, smooth, or hairy, all passing through the *floral receptacle* proceeding from the rim of the calyx; in some cases united into a cylinder. E.) *Summits* blunt.

S. VESS. none. (*Fruit* globular, or ovate, formed of the permanent, pulpy, coloured, tube of the calyx, closed at the summit. E.)

SEEDS numerous, oblong, (angular, hard, bristly; adhering to the inside of the calyx throughout, and interspersed with rigid hairs. E.)

(**Obs.** This fascinating, but perplexing, tribe of plants, has been latterly subjected to considerable research by several learned Botanists, as will appear on reference to the different species described in the sequel of this work; though it is apprehended that the existing obscurities may not yet be entirely dissipated. E.)

RUBUS. (BRAMBLE. RASPBERRY. E.) *Tourn.* 385. *Gærtn.* 73.

CAL. *Cup* one leaf, with five divisions. *Segments* (egg-oblong, concave, pointed, expanding, permanent. E.)

BLOSS. *Petals* five, obovate, as long as the cup, upright, but expanding, often crisped or folded, (attached by their claws to the rim of the calyx, alternate with its segments, deciduous. E.)

STAM. *Filaments* numerous, capillary, shorter than the petals, (from the tumid rim of the calyx within the blossom. E.) *Anthers* roundish, compressed, (of two lobes. E.)

PIST. *Germens* numerous, (globular, crowded together into a round head. E.) *Styles* small, hair-like, growing on the sides of the germens. *Summits* obtuse, permanent.

S. VESS. *Berry* (compound, globular, concave, deciduous, of several round, juicy, combined grains, upon a conical, dry, spongy receptacle. E.)

SEEDS solitary, oblong, (keeled, hard, wrinkled, and pitted. E.)

(**Obs.** *Fruit* black, crimson, or yellowish, often grateful. The seeds have only one testa, or skin, lined with a single membrane, or film. They are not therefore nuts, as they want an external shell; nor are the grains drupas, though the seeds be solitary. E.)

FRAGARIA. (STRAWBERRY. E.) *Tourn.* 152. *Gærtn.* 73.

CAL. *Cup* one leaf, flat, with ten (deep, E.) clefts. *Segments* alternately narrower, and these outside the broad ones.

BLOSS. *Petals* five, roundish, expanding, attached by the short claws to the rim of the cup.

STAM. *Filaments* twenty, awl-shaped, shorter than the blossom, attached to the cup. *Anthers* crescent-shaped, (of two cells, deciduous. E.)

PIST. *Germens* numerous, small, collected into a round head. *Styles* one, from the side of each germen. *Summits* simple, (obtuse. E.)

S. VESS. none. *Receptacle of the seeds* a spurious berry, globular, or egg-shaped, pulpy, soft, large, coloured, abrupt at the base, deciduous. SEEDS numerous, (smooth, small, naked, pointed, ovate, E.) scattered over the surface of the receptacle.

Obs. (Plants with erect, flowering stems, and sending forth trailing runners. *P. sterilis* nearly approaches the genus *Comarum*. E.)

POTENTILLA. (CINQUEFOIL. E.) *Tourn.* 153, *Quinquefolium*. *Gartn.* 73, *Pentaphyllum*.

CAL. *Cup* one leaf, flattish, with ten clefts. *Segments* alternately smaller, reflexed.

BLOSS. *Petals* five, roundish, or heart-shaped, expanding, inserted by short claws to the margin of the calyx.

STAM. *Filaments* twenty, awl-shaped, shorter than the petals, from the rim of the cup. *Anthers* oblong-crescent-shaped, (of two cells. E.)

PIST. *Germens* numerous, small, forming a round head. *Styles* thread-shaped, as long as the stamens, one by the side of each germen. *Summits* blunt, (downy. E.)

S. VESS. none. *Receptacle of the seeds* globular, juiceless, small, permanent, covered with seeds, inclosed in the cup.

SEEDS numerous, (roundish, pointed, wrinkled. E.)

Obs. This genus agrees with *Tormentilla*, except in having one-fifth more in number in all the parts of fructification, so that the two genera might be united. Linn. (but the distinction is obvious and invariable, and similar instances have been admitted. E.)

TORMENTILLA. (TORMENTIL. E.) *Tourn.* 153. (Sm. E.)

CAL. *Cup* one leaf, flat, with eight clefts, every other segment smaller and more acute.

BLOSS. *Petals* four, inversely heart-shaped, flat, expanding, attached by claws to the margin of the cup.

STAM. *Filaments* sixteen, (or more, E.) awl-shaped, half as long as the petals, fixed to the cup. *Anthers* (of two cells, bursting lengthwise. E.)

PIST. *Germens* eight, (roundish, small, smooth, approaching so as to form a globular head. E.) *Styles* thread-shaped, (short, erect, one by the side of each germen. E.) *Summits* blunt.

S. VESS. none. *Receptacle of the seeds* (small, dry, hairy, loaded with seeds, attached laterally, E.) and inclosed by the cup.

SEEDS roundish, naked.

GEUM. (AVENS. E.) *Tourn.* 151, *Caryophyllata*. *Gærtn.* 74. (Sm. E.)

CAL. *Cup* one leaf, with ten clefts. *Segments* alternately very small and sharp-pointed.

BLOSS. *Petals* five, rounded; claws narrow, as long as the cup, fixed to its rim.

STAM. *Filaments* numerous, awl-shaped, as long as the cup, arising from its margin. *Anthers* short, rather broad, blunt, (of two cells E.)

PIST. *Germens* numerous, (ovate, compressed, forming a round head. E.) *Styles* long, attached to the sides of the germens, (with a joint above the middle; lower part permanent, upper deciduous. E.) *Summits* simple.

S. VESS. none. *Receptacle of the seeds* oblong, hairy, (dry, seated upon the reflexed calyx. E.)

SEEDS numerous, compressed, covered with strong hairs, furnished with a long awn formed by the (hardened, lower part of the style, and terminating in a hook. E.)

DRYAS. (MOUNTAIN-AVENS. E.) *Gartn.* 74. (Sm. E.)

CAL. *Cup* one leaf, with eight divisions. *Segments* expanding, strap-shaped, blunt, somewhat shorter than the blossom.

BLOSS. *Petals* eight, oblong, notched at the end, expanding, fixed to the cup.

STAM. *Filaments* numerous, hair-like, (from the rim of the calyx, much shorter than the blossom. E.) *Anthers* small, (roundish, of two lobes. E.)

PIST. *Germens* numerous, small, crowded together. *Styles* (long, E.) hair-like, fixed to the sides of the germens. *Summits* simple.

S. VESS. none. (*Receptacle* depressed, downy, minutely cellular. E.)

SEEDS numerous, roundish, compressed, retaining the styles, which extend into long feathery awns. E.)

Obs. (The calyx has from six to ten segments, and the petals vary in the same proportion: though in the British species eight is the prevalent number. E.)

COMARUM. (MARSH-CINQUEFOIL. E.) *Gzrtm.* 73.

CAL. *Cup* one leaf, with ten clefts, large, concave, expanding, coloured. *Segments* alternately smaller, and placed beneath the others, permanent.

BLOSS. *Petals* five, oblong, pointed, (much less than the smaller segments of the cup to which they are opposite, attached to its margin. E.)

STAM. *Filaments* twenty, awl-shaped, from the rim of the calyx, erect, as long as the blossom, permanent. *Anthers*, crescent-shaped, deciduous.

PIST. *Germens* numerous, roundish, small, forming a globular head. *Styles* simple, short, attached to the sides of the germens. *Summits* simple.

S. VESS. none. *Receptacle of the seeds* (large, permanent, spongy, villous, hemispherical. E.)

SEEDS numerous, pointed, scattered over the surface of the receptacle.

CLASS XIII.

POLYANDRIA.

THE flowers of this Class have, as its title implies, many stamens, that is, from twenty to a thousand, or more, so that it is unnecessary to attempt to count them, further than to ascertain that they amount to twenty or upwards. If the situation of the stamens, upon the Receptacle, is sufficient to distinguish it from the preceding Class, in which they do not stand upon the Receptacle, but either upon the sides of the Calyx or upon the Petals. A regard to this circumstance will be a surer guide than an attention merely to the number of the stamens. If the eye does not at once determine the exact situation of the stamens, carefully and slowly pull off the petals and the segments of the calyx, when if the stamens remain they may be considered as growing upon the Receptacle.

(OBS. Most of the plants of this Class are poisonous; hence the mode of insertion of the stamens becomes doubly important, especially to the experimental naturalist. E.)

POLYANDRIA. (Many Stamens.)

MONOGYNIA. (One Pistil.)

<i>Actæa.</i>	<i>Chelidonium.</i>	<i>Papaver.</i>
<i>Nymphaea.</i>	<i>Glaucium.</i>	<i>Cistus.</i>
<i>Nuphar.</i>	<i>Tilia.</i>	

DIGYNIA. (Two Pistils.)

<i>Pæonia.</i>	<i>Poterrum.</i>
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TRIGYNIA. (Three Pistils.)

<i>Delphinium.</i>

PENTAGYNIA. (Five Pistils.)

<i>Aquilegia.</i>

HEXAGYNIA. (Six Pistils.)

<i>Stratiotes.</i>

POLYGYNIA. (Many Pistils.)

<i>Zostera.</i>	<i>Thalictrum.</i>	<i>Helleborus.</i>
<i>Arum.</i>	<i>Adonis.</i>	<i>Caltha.</i>
<i>Anemone.</i>	<i>Ranunculus.</i>	<i>Sagittaria.</i>
<i>Clematis.</i>	<i>Trollius.</i>	

MONOGYNIA.

ACTÆA. (BANE-BERRIES. E.) *Tourn.* 154, Christophoriana. *Gærtn.* 114.

CAL. *Cup* four leaves. *Leaflets* circular, blunt, concave, shedding.

BLOSS. *Petals* four, tapering each way, larger than the cup, (with claws. E.) deciduous.

STAM. *Filaments* about thirty (cylindrical, dilated upwards. E.) *Anthers* roundish, double, upright.

PIST. *Germen* egg-shaped. *Style* none. *Summit* thickish, obliquely depressed.

S. VESS. *Berry* oval-globular, smooth, with one furrow, and one cell.

SEEDS numerous, semi-globular, ranged in a double row.

(**CHELIDONIUM.** CELANDINE. *Tourn.* 116. *Gærtn.* 115.

CAL. *Cup* two-leaved, roundish. *Leaflets* somewhat egg-shaped, concave, acute, shedding.

BLOSS. *Petals* four, circular, flat, expanding, large, narrower at the base.

STAM. *Filaments* about thirty, flat, dilated upwards, shorter than the blossom. *Anthers* oblong, compressed, obtuse, upright, double.

PIST. *Germen* cylindrical, as long as the stamens. *Style* none. *Summit* a knob, cloven.

S. VESS. *Pod* linear, long, of one cell and two undulated, deciduous valves.

SEEDS numerous, oval, dotted, polished, crested along the upper edge disposed in two rows, on short stalks. *Receptacle* linear, marginal between the seams of the valves. E.)

(**GLAUCIUM.** HORNED-POPPY. *Tourn.* 130. *Gærtn.* 115. *Ait. Hort. Kew. Sm. Fl. Brit. Juss. De Cand. Hook. Scot. Græv. Edin. Chelidonium. Linn.* . . .

CAL. *Cup* inferior, of two oblong, concave, acute, deciduous leaves.

BLOSS. *Petals* four, much larger than the calyx, roundish, obovate, undulated, crumpled, spreading, with short claws, deciduous; two opposite ones rather the smallest.

STAM. *Filaments* numerous, capillary, short. *Anthers* roundish, terminal, of two lobes.

PIST. *Germen* superior, cylindrical, or somewhat compressed, longer than the stamens. *Style* none. *Summit* large, abrupt, permanent, of two or three cloven, compressed, downy lobes.

S. VESS. *Pod* linear, very long, of two or three linear, concave valves, and as many cells.

SEEDS numerous, convex at the outer side, pitted in regular lines, without a crest, disposed irregularly in two rows in each cell, being sunk in the hollows of a spongy or membranous *partition*, connected with the linear marginal *receptacles*, which are placed between the edges of the valves, and bear the seeds on short stalks. Sm. Eng. Fl. E.)

PAPAVER. (POPPY. E.) *Tourn.* 119, 120. *Gærtn.* 60.

CAL. *Cup* two-leaved, egg-shaped. *Leaflets* two, somewhat egg-shaped, concave, blunt, shedding.

BLOSS. *Petals* four, circular, expanding, crumpled, large, narrowest at the base, alternately smaller.

STAM. *Filaments* numerous, hair-like, much shorter than the blossom. *Anthers* oblong, compressed, upright, blunt. (somewhat stalked. E.)

PIST. *Germen* nearly globular, large. *Style* none. *Summit* target-shaped, radiated, (downy, permanent. E.)

S. VESS. *Capsule* of one cell, incompletely separated into a greater or less number of marginal cells, answering to the number of rays in the summit, and opening by several valvular apertures beneath the crown formed by the large and flat summit.

SEEDS numerous, very small, (kidney-shaped, dotted. E.) *Receptacle* consisting of as many longitudinal plaits as there are rays in the summit.

(NYMPHÆA. WHITE WATER-LILY. *Gærtn.* 19. Sm.

CAL. *Cup* beneath, four-leaved, larger than the petals, coriaceous, coloured on the upper surface, permanent.

BLOSS. *Petals* numerous, inserted in several rows upon the *germen*, beneath the stamens.

STAM. *Filaments* numerous, flat, placed on the *germen* above the petals; the outermost gradually dilated. *Anthers* linear, of two parallel cells, closely attached to the edge of each filament.

PIST. *Germen* large, sessile, globose. *Style* none. *Summit* orbicular, sessile, of numerous rays, pointed and separate at the extremity, permanent, bearing the *Nectary*, a central, globose, point.

S. VESS. *Berry* egg-shaped, fleshy, rough, with a bark-like coat, crowned at the top with as many cells as there are rays; at length internally gelatinous and pulpy.

SEEDS roundish, numerous in each cell.

OBS. Flowers closing, and sinking more or less below the surface of the water, at night. E.)

(NUPHAR. YELLOW WATER-LILY. *Ait. Hort. Kew. De Cand. Hook. Scot. Grev. Edin. Nymphaea. Linn.*

CAL. *Cup* inferiour, of five or six large, coriaceous, concave, coloured, permanent leaves.

BLOSS. *Petals* numerous, oblong, much smaller than the calyx; furrowed, and honey-bearing at the back, proceeding, like the stamens, from the receptacle.

STAM. *Filaments* very numerous, unconnected with the germen, linear, recurved. *Anthers* linear, of two parallel cells, closely attached to the inner surface of the upper part of each filament.

PIST. *Germen* superior, nearly sessile, ovate, with an elongation at the summit. *Style* none. *Summit* sessile, orbicular, convex, entire or notched, with many central radiating clefts.

S. VESS. *Berry* coriaceous, smooth, ovate, pointed; of as many cells as there are rays, finally pulpy within.

SEEDS numerous, smooth, ovate, in several rows in each cell. Sm. Eng. Fl. E.)

TILIA. (LIME-TREE. E.) *Tourn.* 381. *Gærtn.* 113.

CAL. *Cup* with five divisions, concave, coloured, almost as large as the blossom, deciduous.

BLOSS. *Petals* five, obovate, blunt, scalloped at the end.

STAM. *Filaments* numerous, thirty or more, awl-shaped, as long as the blossom. *Anthers* (of two nearly orbicular lobes, bursting outwards E.)

PIST. *Germen* roundish. *Style* columnar, as long as the stamens. *Summit* with five obtuse angles.

S. VESS. *Capsule* coriaceous, nearly globular, opening at the base with five cells, seldom all perfect.

SEEDS (rarely more than one in each cell of the germen; globular smooth. E.)

OBS. In general only one seed comes to perfection, and this pushes aside the others, which are barren; so that an incautious observer would be apt to pronounce, that the capsule has but one cell. Linn.

CISTUS. (CISTUS. E.) *Tourn.* 136 and 128, *Helianthemum* *Gærtn.* 76.

CAL. *Cup* five leaves, permanent. *Leaflets* circular, concave, two of them smaller, placed beneath, but alternating with the others, (partly membranous. E.)

BLOSS. *Petals* five, circular, flat, expanding, very large, (with short claws. E.)

STAM. *Filaments* numerous, hair-like, shorter than the blossom. *Anthers* roundish, small.

PIST. *Germen* nearly globular. *Style* simple, as long as the stamens. *Summits* flat, circular.

S. VESS. *Capsule* rotundish, invested by the closed, permanent calyx.

SEEDS numerous, roundish, small.

OBS. The Essential Character of this genus consists in the two small and alternate leaves of the calyx. Some species have a capsule of one

cell and three valves, in others it has five or ten cells, and as many valves as there are cells. Linn.

(In the seeds of the whole natural order of the *Cistæ*, Mr. Brown ascertained a peculiarity of structure; that the radicle will be found at the opposite extremity to the umbilicus. E.)

DIGYNIA.

(PÆONIA. PEONY. *Tourn.* 146. *Gærtn.* 65.

CAL. *Cup* five leaves, permanent. *Leaflets* roundish, concave, reflexed, unequal in size and position.

BLOSS. *Petals* five, roundish, concave, narrower at the base, expanding, very large.

STAM. *Filaments* very numerous, capillary, shorter than the blossom. *Anthers* oblong, quadrangular, upright, four-celled, large.

PIST. *Germens* two, egg-shaped, upright, downy. *Style* none. *Summits* compressed, oblong, blunt, coloured, curved.

S. VESS. *Capsules* answering in number to the germens, egg-oblong, widely expanding, cottony, having one cell, and one valve, opening wide longitudinally.

SEEDS numerous, oval, polished, coloured, adhering to the opening sutures.

Obs. The general number of germens appears to be two, but it varies in some species, seldom, however, exceeding five. The germen, as do other parts of the flower, multiply by cultivation. E.)

POTERIUM. (BURNET. E.) *Tourn.* 68. *Pimpinella.*
Gærtn. 32.

Male flowers forming a spike.

CAL. *Cup* four leaves. *Leaflets* egg-shaped, coloured, shedding.

BLOSS. with four divisions. *Segments* egg-shaped, concave, expanding, permanent.

STAM. *Filaments* many, thirty to fifty, hair-like, very long, limber. *Anthers* roundish, double.

Female flowers, on the same spike, (nearer the extremity. E.)

CAL. *Cup* as above.

BLOSS. *Petal* one, wheel-shaped. *Tube* short, roundish, closing at the mouth. *Border* with five divisions. *Segments* egg-shaped, flat, reflexed, permanent.

PIST. *Germens* two, egg-oblong, within the tube of the blossom. *Styles* two, hair-like, coloured, limber, as long as the blossom. *Summits* pencil-shaped, coloured.

S. VESS. *Berry* formed of the tube of the blossom, grown thick, hard, and closed, (by some considered a corticated two-celled Nut. E.)

SEEDS two.

Obs. *P. Sanguischa* bears a berry which is angular and juiceless, its seeds are four-cornered, tapering to a point at each end. The male flowers produce two feeble pistils. Linn. And the calyx has two, three, or four leaves. Reich.

TRIGYNIA.

DELPHINIUM. (LARK-SPUR. E.) *Tourn.* 241. *Gærtn.* 65.

CAL. *Cup* none.

BLOSS. *Petals* five, unequal, ranged in a circle, the uppermost before blunter than the rest, behind extended into a straight, tubular, long, blunt horn, or spur, the other egg-spear-shaped, expanding, nearly equal.

Nectary cloven, its front standing in the upper part of the circle of the petals, and its hinder part inclosed by the tube of the uppermost petal.

STAM. *Filaments* many, fifteen to thirty, awl-shaped, dilated at the base, very small, inclining towards the uppermost petal. *Anthers* upright, small.

PIST. *Germen* three, or one, egg-shaped, ending in styles nearly as long as the stamens. *Summits* simple, reflexed.

S. VESS. *Capsules* three, or one, (answering in number to the germens, E.) egg-awl-shaped, straight, with one valve, opening inwards.

SEEDS numerous, angular, (rough: E.)

PENTAGYNIA.

AQUILEGIA. (COLUMBINE. E.) *Tourn.* 242. *Gærtn.* 118.
(Sm. E.)

CAL. *Cup* none.

BLOSS. *Petals* five, spear-egg-shaped, flat, expanding, equal.

CAL. *Nectaries* five, equal, alternating with the petals, horn-shaped, gradually widening upwards, the mouth ascending obliquely outwards, attached to the receptacle inwardly, extending below into a long tapering tube, or spur, blunt at the end.

STAM. *Filaments* numerous, thirty to forty, awl-shaped, the outer ones shortest, (the innermost abortive, dilated, and corrugated, like chaffy scales, closely unfolding the germens. E.) *Anthers* (heart-shaped, E.) upright, as tall as the nectaries.

PIST. *Germens* five, egg-oblong, terminating in awl-shaped styles longer than the stamens. *Summits* upright, undivided.

S. VESS. *Capsules* five, distinct, cylindrical, parallel, straight, pointed, with one valve, opening from the point inwardly.

SEEDS numerous, egg-shaped, keeled, adhering to the opening seam.

(STRATIOTES. WATER-ALOE. *Gærtn.* 14. *Fl. Brit.*

CAL. superior, of one leaf, tubular, erect, the border in three deep, deciduous segments.

BLOSS. *Petals* three, alternate with the calyx, and twice as long, obovate, concave, slightly spreading.

STAM. *Filaments* about twenty, or fewer, shorter than the segments of the calyx, and proceeding from its base. *Anthers* vertical, awl-shaped.

PIST. *Germen* inferior, elliptical, obtusely triangular. *Styles* six, deeply cloven, full as long as the stamens. *Stamens* simple.

S. VESS. *Berry* coated, oval, with six or more cells, and as many angles, tapering at each end.

SEEDS numerous, obovate, in two rows.

Obs. Each flower is accompanied by a permanent sheath, or bractea, of a single leaf, variously divided, which is not wanted to strengthen the generic character, and indeed does not belong to the parts of fructification. Sm. Eng. Fl.

Aquatic plants; with radical leaves resembling those of an *Aloe*. "The anthers being occasionally imperfect in one flower, the stigmas in another, has induced some authors to consider the *Stratiotes* as dioecious." E.)

POLYGYNIA.

ZOSTERA. (GRASS-WRACK. E.) *Gærtn.* 19.

Male flowers.

CAL. *Sheath* none, except the base of the leaf, inclosing the spike-stalk, approaching, and notched on each side towards the top.

Spike-stalk strap-shaped, flat, bearing stamens on its upper and pistils on its under side.

Cup none.

BLOSS. none.

STAM. *Filaments* alternate, numerous, very short, fixed to the spike-stalk above the germen. *Anthers*, one on each filament, egg-oblong, blunt, awl-shaped, and crooked upwards and backwards.

Female flowers.

CAL. as above.

Cup none.

BLOSS. none.

PIST. *Germen*s fewer, egg-shaped, compressed, alternate, two-edged, fixed by the top to a little fruit-stalk. *Style*, one on each germen, simple. *Stamens* two, hair-like.

S. VESS. *Capsule* egg-shaped, beaked, terminated by the style, rather compressed, membranous, transparent, of one cell, without valves, *Gærtn.* opening lengthwise at a lateral angle. Linn.

SEEDS single, elliptical, compressed, scored. *Gærtn.*

Obs. (The peculiar structure of the plants of this genus has occasioned a diversity of opinion among the most able Botanists, both as to the proper designation of the several parts of fructification, and, consequently, of their position in the vegetable system. Sir J. E. Smith describes *Zostera* as having "a simple unilateral spike of naked flowers disposed in two ranks,"

and, followed by Vahl, places it in the Class Monandria; while Schreber, Willdenow, Hooker, and Greville, admit it into Monoecia; nor is it here inconsiderately retained in its present position: an arrangement not merely approved by the Author, but sanctioned by Thunberg and others. E.)

A'RUM. (CUCKOO-PINT. E.) *Tourn.* 69. *Gærtn.* 84.

Male flowers on the same fruit-stalk with the females, closely crowded, between a double row of tendrils.

CAL. *Sheath* of one leaf, very large, oblong, wrapped round at the base, approaching at the top, compressed in the middle, coloured on the inside.

Sheathed Fruit-stalk, club-shaped, undivided, a little shorter than the sheath, coloured, set round with germes on the lower part, above the germens shrivelling.

Cup none.

BLOSS. none.

Nectaries, thick at the base, ending in thread-shaped tendrils, placed in two rows round the middle of the fruit-stalk.

STAM. *Filaments* none. *Anthers* sessile, quadrangular.

Female flowers on the lower part of the fruit-stalk, near together.

CAL. *Sheath* and *sheathed Fruit-stalk* as above.

Cup none.

BLOSS. none.

PIST. *Germens* each inversely egg-shaped. *Style* none. *Summit* bearded with soft hairs.

S. VESS. *Berry* globular, of one cell.

SEEDS many, roundish.

Obs. The unparalleled structure of this flower has given rise to many disputes amongst the most eminent Botanists. The receptacle is elongated into a naked club, with germens surrounding its base. The stamens, (which is truly wonderful,) are fixed to the receptacle more within than the germens, and consequently standing less in need of filaments to elevate them. Hence it may be said to be an inverted flower. (Dr. Hull, (who follows our arrangement as to position,) considers the mysterious tendrils of the nectaries, as merely filaments, by a *Insus Nature* exhibited separate from the anthers. E.)

ANEMONE. (ANEMONE. E.) *Tourn.* 147. *Gærtn.* 74.

CAL. none.

BLOSS. *Petals* in one, two, or three rows, rather oblong, (from five to fifteen, imbricated in the bud, deciduous. E.)

STAM. *Filaments* numerous, hair-like, half as long as the blossom.

Anthers double, upright (bursting laterally. E.)

PIST. *Germens* numerous, collected into a round, or oblong head.

Styles tapering, short. *Summits* blunt.

S. VESS. none. *Receptacle* globular or oblong, beset with hollow dots.

SEEDS numerous, pointed, retaining the permanent style.

Obs. *A. Pulsatilla* has a many-cloven leafy Involucrum, and the remaining styles at the extremity of the seeds appear feathery.

CLEM'ATIS. (TRAVELLER'S JOY. E.) *Tourn.* 150, *Clematis*. *Gærtn.* 74.

CAL. *Cup* none.

BLOSS. *Petals* four to six, flexible, oblong.

STAM. *Filaments* numerous, awl-shaped, shorter than the blossom. *Anthers* fixed to the sides of the filaments, (two-lobed. E.)

PIST. *Germens* many, (sessile, collected into a globular head, E.) compressed, terminating in awl-shaped styles, longer than the stamens. *Summit* simple.

S. VESS. none. *Receptacle* a small knob.

SEEDS numerous, roundish, compressed, retaining the styles (as long feathery awns. E.)

THALICTRUM. (RUE-WEED. E.) *Tourn.* 143. *Gærtn.* 74. (Sm. E.)

CAL. *Cup* none; unless the blossom be considered such.

BLOSS. *Petals* four or five, circular, blunt, concave, shedding.

STAM. *Filaments* numerous, broadest in the upper part, compressed, longer than the blossom. *Anthers* oblong, (drooping. E.)

PIST. *Germens* several, roundish, (striated. E.) *Styles* none. *Summits* (oblique, ovate, tumid, downy. E.)

S. VESS. none.

SEEDS as many as the germens, furrowed, (or winged, E.) egg-shaped, without awns.

Obs. The number of stamens and pistils varies in different species.

ADONIS. (PHEASANT'S-EYE. E.) *Gærtn.* 74.

CAL. *Cup* five leaves. *Leaflets* blunt, concave, converging, a little coloured, deciduous.

BLOSS. *Petals* five to fifteen, oblong, blunt, shining.

STAM. *Filaments* numerous, very short, awl-shaped. *Anthers* oblong, bent inwards, (two-lobed. E.)

PIST. *Germens* numerous, (incurved, forming a round head. E.) *Styles* none. *Summits* acute, reflexed.

S. VESS. none. *Receptacle* oblong, spike-like

SEEDS numerous, irregular, angular, without awns, gibbous at the base, bent back at the point.

RANUNCULUS. (CROW-FOOT. E.) *Tourn.* 149. *Gærtn.* 74.

CAL. *Cup* five leaves. *Leaflets* egg-shaped, concave, a little coloured, deciduous.

BLOSS. *Petals* five, blunt, shining, with small claws.

Nectary a little cavity, just above the claw of each petal.

STAM. *Filaments* numerous, nearly half as long as the petals. *Anthers* upright, oblong, blunt, double.

Pist. *Germens* numerous, collected into a head. *Styles* none. *Summits* reflexed, very small.

S. Vess. none. *Receptacle* connecting the seeds by very short footstalks.

SEEDS numerous, irregular, each tipped with a point or hook, figure various.

Obs. The Essential Character of this genus consists in the nectary, the other parts of the flower being inconstant. This nectary is in some species a naked pore, in others encompassed by a cylindrical border, and, in others again, closed by a scale which is notched at the end. In *R. ficaria* the cup has three leaves, and the blossom more than five petals. *R. hederaceus* has only five stamens, and *R. sceleratus* an awl-shaped receptacle, and the fruit in a spike. In some species the seeds are roundish, in others depressed; sometimes they are beset with prickles like a hedge-hog, and at others they are but few in number. Linn.

(According to Professor Hooker, the nectariferous pore is analogous to the tubular petals, (nectaries of Smith,) in *Trollius* and *Helleborus*; only in these last the broad expansion which forms the principal part of the petal in *Ranunculus*, is wanting. E.)

TROLLIUS. (GLOBE-FLOWER. E.) *Gærtn.* 118.

CAL. none.

Bloss. *Petals* about fourteen, nearly egg-shaped, (deciduous, concave, converging, E.) three in each of the three outer rows, and five in the innermost.

Nectaries about nine, strap-shaped, flat, incurved, (with a single lip; base somewhat tubular. E.)

STAM. *Filaments* numerous, bristle-shaped, shorter than the blossom. *Anthers* upright, linear.

Pist. *Germens* numerous, sessile, columnar. *Styles* none. *Summits* sharp-pointed, shorter than the stamens.

S. Vess. (*Capsules* as many as the germens, cylindrical, with points, forming a globular head. E.)

SEEDS (recurved, nearly a dozen in each capsule, angular. E.)

HELLEBORUS. (BEAR'S-FOOT. E.) *Tourn.* 144. *Gærtn.* 65. (Sm. E.)

CAL. *Cup* none, (unless the blossom be considered such, which in some species is permanent.)

Bloss. *Petals* five, circular, blunt, (concave, subcoriaceous, E.) large.

Nectaries generally more numerous, very short, placed in a circle, consisting of one leaf, tubular, (narrowing downward with two upright, obtuse, unequal lips at the orifice. E.)

STAM. *Filaments* numerous, awl-shaped. *Anthers* compressed, narrowest in the lower part, upright, (of two cells, bursting at the edges. E.)

Pist. *Germens* generally six, compressed. *Styles* awl-shaped. *Summit* rather thick, (roundish. E.)

S. VESS. *Capsules* compressed, (coriaceous, beaked with the styles, E.) keeled at both edges, the lower edge the shortest, the upper the most convex, opening.

SEEDS several, (oval, at the edges of the capsule, attached in two rows, to a linear, double-notched, deciduous *receptacle*. E.)

CAL'THA. (MEADOW-BOUT. E.) *Tourn.* 145. *Populago.* *Gærtn.* 118.

CAL. *Cup* none.

BLOSS. *Petals* five, or more, egg-shaped, flat, expanding, large, shedding.

STAM. *Filaments* numerous, thread-shaped, shorter than the petals. *Anthers* compressed, blunt, upright, (of two lobes. E.)

PIST. *Germens* from five to ten, oblong, compressed, upright. *Styles* none. *Summits* simple.

S. VESS. *Capsules* from five to ten, short, pointed, expanding, keeled at both edges, opening at the upper seam.

SEEDS numerous, roundish, with an edging, fixed to the upper seam.

SAGITTA'RIA. (ARROW-HEAD. E.) *Gærtn.* 84.

Male flowers, numerous.

CAL. *Cup* three leaves. *Leaflets* egg-shaped, concave, permanent.

BLOSS. *Petals* three, circular, blunt, flat, expanding, thrice as large as the cup.

STAM. *Filaments* many, generally twenty-four, awl-shaped, collected into a little head. *Anthers* upright as long as the cup.

Female flowers fewer, beneath the other.

CAL. *Cup* as above.

BLOSS. *Petals* three, as above.

PIST. *Germens* numerous, compressed, forming a little head, gibbous on the outer side, ending in very short styles. *Summits* acute, permanent.

S. VESS. (*Capsules* very numerous, ventricose, compressed, gibbous on one side with a broad membranous border, terminated by the short, recurved style, one-celled, arranged in a globular form, on a *receptacle* globose, naked, dotted.

SEEDS solitary, egg-oblong, appearing doubled together, very minutely dotted. E.)

CLASS XIV.

DIDYNAMIA.

THE Essential Character of this Class consists in the flowers being furnished with four stamens, two of which are long, and two short. The short stamens stand next together and adjoining to the style of the pistil. They are covered by the blossom, which is irregular in its shape. This Class comprehends the whirled, or whorled, the lipped, or labiate, and the gaping, or ringent flowers, natural assemblages comprised chiefly in the *Perticillatæ*, and *Personatæ* Orders of Linnaeus. It admits of the following Natural Character :—

CAL. *Cup* one leaf, upright, tubular, with five clefts. *Segments* unequal, permanent.

BLOSS. one petal, upright, the base tubular, containing honey, and serving for a nectary. *Border* generally gaping, *upper lip* straight, *lower lip* expanding, with three *segments*, the middle one the broadest.

STAM. *Filaments* four, strap-shaped, fixed to the tube of the blossom, but reclining towards the back of it. *Filaments* all parallel, seldom taller than the blossom. The two middle ones shorter than those on each side. *Anthers* generally covered by the upper lip of the blossom, and approaching each other so as to stand in pairs.

PIST. *Germen* generally superior. *Style* single, thread-shaped, bent in the same manner as the filaments, and usually standing in the midst of them, but somewhat longer and incurved at the top. *Summit* generally cloven.

S. VESS. either none, (as in the first Order,) or when there is one, (as in the second Order,) consisting of two cells.

SEEDS in the *first Order* four, naked, sessile, at the bottom of the cup. In the *second Order* numerous, attached to the receptacle, which is placed in the middle of a capsule.

Obs. The flowers of this Class are, for the most part, nearly upright, but leaning a little from the stem, so that the blossom may more effectually protect the anthers from rain, and the pollen more easily fall upon the summit. The plants in the first Order are odoriferous, cephalic, and resolvent. None of them are poisonous.

GYMNOSPERMIA. (Seeds four, naked.)*

<i>Ajuga.</i>	<i>Galeopsis.</i>	<i>Clinopodium.</i>
<i>Teucrium.</i>	<i>Galeobdolon.</i>	<i>Origanum.</i>
<i>Nepeta.</i>	<i>Betonica.</i>	<i>Thymus.</i>
<i>Verbena.</i>	<i>Stachys.</i>	<i>Melittis.</i>
<i>Mentha.</i>	<i>Ballota.</i>	<i>Scutellaria.</i>
<i>Glechoma.</i>	<i>Marrubium.</i>	<i>Prunella.</i>
<i>Lamium.</i>	<i>Leonurus.</i>	

ANGIOSPERMIA. (Seeds numerous, in a Capsule.)

<i>Bartsia.</i>	<i>Pedicularis.</i>	<i>Linnaea.</i>
<i>Rhinanthus.</i>	<i>Antirrhinum.</i>	<i>Sibthorpia.</i>
<i>Euphrasia.</i>	<i>Scrophularia.</i>	<i>Limosella.</i>
<i>Melampyrum.</i>	<i>Digitalis.</i>	<i>Orobancha.</i>
<i>Lathræa.</i>		

GYMNOSPERMIA.

AJUGA. (BUGLE. E.) *Tourn.* 98. Bugula, and Chamæpitys.

CAL. *Cup* one leaf, short, with five shallow clefts, nearly equal, permanent.

BLOSS. one petal, gaping. *Tube* cylindrical, crooked. *Upper lip* very small, upright, clove-like, blunt. *Lower lip* large, expanding, with three segments, blunt, middle segment large, inversely heart-shaped, lateral segments small.

STAM. *Filaments* four, two short, and two long, awl-shaped, upright, longer than the upper lip, (incurved, exerted. *Anthers* reniform, one-celled. Hook. E.)

PIST. *Germen* with four divisions. *Style* thread-shaped, incurved, in size and situation similar to the stamens. *Summits* two, slender, the lowermost the shortest.

S. VESS. none. The *Cup* closing retains the seed.

SEEDS four, rather long, (rugged, E.)

* ("With four pericarps, or apparently naked seeds, at the bottom of the calyx." Hook. E.)

TEU'CRUM. (GERMANDER. E.) *Tourn.* 97. *Chamædrys*, and 98.

CAL. *Cup* one leaf, with five clefts, nearly equal, acute, gibbous on one side the base, permanent.

BLOSS. one petal, gaping. *Tube* cylindrical, short, curved upwards. *Upper lip* upright, acute, deeply divided, even lower than its base. *Segments* standing wide. *Lower lip* with three clefts, expanding, *lateral segments* rather upright, of the shape of the upper lip, the *middle* one large, circular.

STAM. *Filaments* four, awl-shaped, longer than the upper lip of the blossom, and projecting between its segments. *Anthers* small.

PIST. *Germen* four-cleft. *Style* thread-shaped, in size and situation similar to the stamens. *Summits* two, slender.

S. VESS. none. The *Cup* remaining unchanged contains the seeds.

SEEDS four, roundish, (wrinkled. E.)

Obs. The very deep division of the upper lip of the blossom, and its segments standing so wide apart, give the appearance of a flower without any upper lip. *T. Chamædrys* has a tubular calyx, and bears its flowers in the bosom of the leaves. Linn.

NEP'ETA. (CAT-MINT. E.) *Tourn.* 95. *Cataria*.

CAL. *Cup* one leaf, tubular, cylindrical; *mouth* with five teeth, acute, upright, *upper* teeth the longest, the *lower* most expanded.

BLOSS. one petal, gaping. *Tube* cylindrical, incurved; *border* open. *Mouth* expanding, heart-shaped, bordered by two very short, reflexed, blunt, segments. *Upper lip* upright, circular, notched. *Lower lip* circular, concave, larger, scalloped at the edge.

STAM. *Filaments* four, two long, and two short, awl-shaped, approaching, covered by the upper lip. *Anthers* fixed sidewise.

PIST. *Germen* four-cleft. *Style* thread-shaped, in length and situation similar to the stamens. *Summit* cloven, acute.

S. VESS. none. The permanent, upright *Cup* contains the seeds.

SEEDS four, somewhat egg-shaped.

VERBENA. (VERVAIN. E.) *Tourn.* 95. *Gærtn.* 66.

CAL. *Cup* one leaf, angular, tubular, slender, permanent, with five teeth, one of the teeth lopped.

BLOSS. one petal, unequal. *Tube* cylindrical, straight in the lower half, dilated and curved inwards towards the top. *Border* expanding, with five clefts. *Segments* rounded, nearly equal.

STAM. *Filaments* four, like bristles, very short, concealed within the tube of the blossom, two of them longer. *Anthers* (incumbent, each of two lobes. E.)

PIST. *Germen* four, quadrangular. *Style* thread-shaped, as long as the tube. *Summit* blunt.

S. VESS. at first a membranous, evanescent pellicle ; afterwards the cup contains the naked seeds.

SEEDS two or four, oblong, (slightly angular, and roughish with minute dots. E.)

ORS. Linnæus allotted a place to this genus in the Class Diandria, because some of the species have only two stamens ; but as the species found with us has uniformly four, and its structure in other respects agrees with the plants of this Class, it is introduced where the English Botanist would expect to find it. (Botanists differ as to the precise nature of the membrane which invests the seeds. Though only to be detected during their immature state, Professor Hooker considers it decidedly a pericarp, and therefore removes *Verbena* to the Order Angiospermia ; while Sir J. E. Smith insists that " the covering of the seeds is a real pellicle, not a pericarp ; " which opinion he conceives to be confirmed by the whole structure of the genus, its affinity to the rest of the Gymnospermia, and dissimilarity to the Angiospermia ; and also refers to a like conformation in *Chenopodium*. As every provision of nature must be competent to its end ; it appears reasonable to conclude that the necessary protection and accommodation for the seeds by a matrix accompanying them to maturity, or a substitute for such, is more effectually afforded in this case, as in many analogous instances, by the permanent calyx, than by a fugacious film, " vix manifestum, vel fere nullum." E.)

MENTHA. (MINT. E.) *Tourn.* 89.

CAL. • *Cup* one leaf, tubular, upright, with five teeth, equal, permanent.

BLOSS. one petal, upright, tubular, rather longer than the cup. *Border* with four divisions, nearly equal. The *upper Segment* broadest, notched.

STAM. *Filaments* four, awl-shaped, upright, distant, the two next each other the longest. *Anthers* (two-lobed. E.)

PIST. *Germen* four-lobed. *Style* thread-shaped, upright, longer than the blossom. *Summit* cloven, expanding.

S. VESS. none. • *Cup* upright, containing the seeds.

SEEDS four, small.

GLECHOMA. *Curt.* 143.

CAL. • *Cup* one leaf, tubular, cylindrical, scored, very small, permanent ; with five marginal teeth. *Segments* unequal, pointed.

BLOSS. one petal, gaping. *Tube* slender, compressed. *Upper lip* erect, blunt, bifid. *Lower lip* expanding, large, blunt, with three segments, the middle one largest, notched.

STAM. *Filaments* four, two long and two short, covered by the upper lip. *Anthers* of each pair approaching so as to form a cross.

PIST. *Germen* four-cleft. *Style* thread-shaped, curved under the upper lip. *Summit* cloven into two acute divisions.

S. VESS. none.

SEEDS four, egg-shaped, at the bottom of the permanent calyx.

LA'MIUM. (DEAD-NETTLE. E.) *Tourn.* 85.

CAL. *Cup* one leaf, tubular, widening upwards, with five awned teeth, nearly equal, permanent.

BLOSS. one petal, gaping. *Tube* cylindrical, short. *Border* open. *Mouth* inflated, compressed, gibbous, with a little reflexed tooth on each side. *Upper lip* vaulted, circular, blunt. *Lower lip* shorter, inversely heart-shaped, notched, reflexed.

STAM. *Filaments* four, awl-shaped, two long and two short, covered by the upper lip. *Anthers* oblong, hairy, (bivalve. E.)

PIST. *Germen* four-cleft. *Style* thread-shaped, in length and situation similar to the stamens. *Summit* of two acute segments.

S. VESS. none. The *Cup* remaining open contains the seeds in its bottom.

SEEDS four, short, triangular, convex on one side, lopped at each end.

GALEOP'SIS. (HEMP-NETTLE. E.) *E. Bot.* 207.

CAL. *Cup* one leaf, tubular, with five teeth, terminating in sharp spines, as long as the tube, permanent.

BLOSS. one petal, gaping. *Tube* short. *Border* open. *Mouth* somewhat wider than the tube, and as long as the cup. Above the base of the lower lip on each side appears a little prominence, hollow on the under surface. *Upper lip* circular, concave, serrated at the top. *Lower lip* with three segments, the lateral ones circular, the middle one larger, scoloped, notched.

STAM. *Filaments* four, two long and two short, awl-shaped, covered by the upper lip. *Anthers* roundish, bivalve.

PIST. *Germen* four-lobed. *Style* thread-shaped, of the length and situation of the stamens. *Summit* cloven, acute.

S. VESS. none.

SEEDS four, triangular, convex at the summit, in the bottom of the rigid, spinous, open-mouthed calyx.

ORS. In *G. Ladanum* the upper lip of the blossom is a little reflexed, but not very evidently scoloped. Linn. *G. Galeobdolon* has no teeth on the lower lip of the blossom, but it is divided into three equal segments, and the upper lip is entire, being only fringed with a few soft hairs. Hudson made a distinct genus of it, under the name of *Galeobdolon*.

GALEOB'DOLON. (ARCHANGEL. E.) *Huds. Curt.* 223.

CAL. *Cup* one leaf, tubular, bell-shaped, with five teeth, tapering to a point, the upper tooth erect, distant, the two lower expanding.

BLOSS. one petal, gaping. *Tube* cylindrical, short. *Upper lip* oval, vaulted, entire, fringed, hairy. *Lower lip* shorter, with three clefts, unequal, the lateral segments egg-shaped, tapering, the outer edge bent back, the middle segment longer, straight, tapering.

STAM. *Filaments* four, awl-shaped, covered by the upper lip, two of them longer. (*Anthers* of two roundish lobes. E.)

PIST. *Germen* four-lobed. *Style* thread-shaped, the length and situation of the stamens. *Summit* in two acute, spreading segments.
S. VESS. none. The *Cup* unchanged contains the seeds in its bottom.
SEEDS four, short, triangular, lopped.

BETONICA. (BETONY. E.) *Tourn.* 96.

CAL. *Cup* one leaf, tubular, cylindrical, five-toothed, spinous-tipped, permanent.
BLOSS. one petal, gaping. *Tube* cylindrical, incurved. *Upper lip* circular, entire, flat, upright. *Lower lip* with three segments, the middle one broader, circular, notched.
STAM. *Filaments* four, two long and two short, as long as the mouth of the blossom, and inclining towards the upper lip. *Authers* nearly globular.
PIST. *Germen* four-lobed. *Style* in shape, size, and situation, resembling the stamens. *Summit* cloven. (acute. E.)
S. VESS. none.
SEEDS four, egg-shaped, (in the bottom of the smooth, somewhat converging calyx. E.)

STA'CHYS. (WOUNDWORT. E.) *Tourn.* 86.

CAL. *Cup* one leaf, tubular, angular, with five clefts, permanent, teeth awl-shaped, spinous-pointed, nearly equal.
BLOSS. one petal, gaping. *Tube* very short. *Mouth* oblong, gibbous towards the base. *Upper lip* upright, egg-shaped, vaulted, generally notched. *Lower lip* large, with three segments, the lateral segments reflexed, the middle one largest, notched, and fold'd back.
STAM. *Filaments* four, two long and two short, awl-shaped; after-flowering, curved to the sides of the mouth. *Authers* (roundish, of two valves. E.)
PIST. *Germen* (angular, four-lobed. E.) *Style* thread-shaped, agreeing in length and situation with the stamens. *Summit* cloven, acute.
S. VESS. none. The *Cup* but little changed, contains the seeds.
SEEDS four, egg-shaped, angular.
Obs. In *S. arvensis* the upper lip of the blossom is entire.

BALLOTA. (HENBIT. E.) *Tourn.* 85.

CAL. *Cup* one leaf, tubular, salver-shaped, regular, with five angles and ten scores, oblong, upright, permanent. *Rim* open, plaited, with five pointed teeth.
BLOSS. one petal, gaping. *Tube* cylindrical, as long as the cup. *Upper lip* upright, egg-shaped, scolloped, concave. *Lower lip* with three segments, blunt, the middle one largest, cloven.
STAM. *Filaments* four, two long and two short, awl-shaped, inclining towards, and shorter than, the upper lip. *Authers* oblong, (of two valves. E.)

PIST. *Germen* small, (four-lobed.) *Style* thread-shaped, in length and situation similar to the stamens. *Summit* slender, cloven.

S. VESS. none.

SEEDS four, egg-shaped, (at the bottom of the somewhat hardened calyx. E.)

Obs. It has the involucre of *Clinopodium*, the calyx of *Marrubium*, and the blossom of *Stachys*, but is more nearly allied to *Marrubium*. Linn.

MARRUBIUM. (HOREHOUND. E.) *Tourn.* 91.

CAL. *Cup* one leaf, somewhat salver-shaped, tubular, with ten furrows. *Rim* spreading, regular, generally with ten, (sometimes five, E.) teeth; *teeth* alternately smaller.

BLOSS. one petal, gaping. *Tube* cylindrical. *Border* spreading. *Mouth* long, tubular. *Upper lip* upright, linear, in two acute lobes. *Lower lip* broader, reflexed, with three segments, *middle* segment broad, notched; the *lateral* segments acute.

STAM. *Filaments* four, two long and two short, shorter than the blossom, covered by the upper lip. *Anthers* simple.

PIST. *Germen* four-lobed. *Style* thread-shaped, in length and situation similar to the stamens. *Summit* cloven.

S. VESS. none.

SEEDS four, rather oblong; at the bottom of the hardened calyx, which is contracted at the orifice.

LEONURUS. (MOTHERWORT. E.) *Tourn.* 87. (Sm. E.)

CAL. *Cup* one leaf, tubular, cylindrical, but with five prominent angles, and five teeth, permanent, (short, cylindrical. E.)

BLOSS. one petal, gaping. *Tube* narrow. *Border* spreading. *Upper lip* the longest, semi-cylindrical, concave, gibbous, roundish and blunt at the end, entire; covered with soft hairs. *Lower lip* reflexed, with three divisions. *Segments* spear-shaped, nearly equal.

STAM. *Filaments* four, two long and two short, (much shorter than the blossom, E.) covered by the upper lip. *Anthers* oblong, (attached by the back, incumbent, and soon bursting in front into two cells, E.) sprinkled with minute, solid, shining, globular particles.

PIST. *Germens* four, (or one four-lobed. Sm. E.) *Style* thread-shaped, incurved. *Summit* of two acute, spreading segments.

S. VESS. none.

SEEDS four, oblong, convex on one side, angular on the other, (hairy, in the tube of the slightly hardened, strongly veined calyx. E.)

CLINOPODIUM. (WILD BASIL. E.) *Tourn.* 92.

CAL. *Involucre* of many bristle-shaped leaves, as long as the cup, placed under the whorls.

Cup one leaf, cylindrical, slightly curved, (ribbed, E.) two-lipped. *Upper lip* broader, with three segments, acute, reflexed. *Lower lip* deeply divided, slender, incurved.

BLOSS. one petal, gaping. *Tube* short, gradually widening to the mouth. *Upper lip* upright, concave, blunt, notched at the end. *Lower lip* with three clefts, blunt. *Middle Segment* broader, notched.

STAM. *Filaments* four, two long and two short, covered by the upper lip. *Anthers* (two-lobed. E.)

PIST. *Germen* with four divisions. *Style* thread-shaped, in length and situation similar to the stamens. *Summit* with two pointed lobes.

S. VESS. none. The *Cup* closing at the neck, and ventricose below, contains the seeds.

SEEDS four, egg-shaped.

ORGANUM. (MARJORAM. L.) *Tourn.* 94.

CAL. *Involucrum* spike-like, tiled with *Floral-leaves*, egg-shaped, coloured, compound, (a spicate, quadrangular conc. Hook. a quadrangular spurious catkin. Sm. E.)

Cup unequal, various.

BLOSS. one petal, gaping. *Tube* cylindrical, compressed. *Upper lip* upright, flat, blunt, notched at the end. *Lower lip* with three clefts, segments nearly equal.

STAM. *Filaments* four, two long and two short, thread-shaped, (the two longest longer than the blossom. E.) *Anthers* (two-lobed. E.)

PIST. *Germen* four-lobed. *Style* thread-shaped, inclining towards the upper lip of the blossom. *Summits* very slightly cloven.

S. VESS. none.

SEEDS four, egg-shaped: in the bottom of the closing calyx.

Obs. The *Involucrum* constitutes its Essential Character. The cup, in some species, is nearly equal, with five teeth; in others it consists of two lips, with the upper lip large and entire, the lower lip hardly perceptible; in others again, the cup is formed of two leaves. Linn.

THYMUS. (THYME. • CALAMINT. E.) *Tourn.* 93.

CAL. *Cup* one leaf, tubular, (ribbed, E.) cloven half way down into two lips, permanent. *Mouth* closed by soft hairs. *Upper lip* broader, flat, upright, with three teeth. *Lower lip* with two bristles, (or awl-shaped teeth, E.) of equal length.

BLOSS. one petal, gaping. *Tube* as long as the cup. *Mouth* small. *Upper lip* short, flat, upright, notched at the end, blunt. *Lower lip* long, expanding, broader, with three segments, blunt; *middle Segment* broadest.

STAM. *Filaments* four, two long and two short, incurved. *Anthers* small; (two-lobed. E.)

PIST. *Germen* four-cleft. *Style* thread-shaped. *Summit* in two acute segments.

S. VESS. none.

SEEDS four, small, roundish: at the bottom of the contracted calyx

MELITTIS. (BASTARD-BALM. E.) Curt. 68.

CAL. *Cup* one leaf, bell-shaped, cylindrical, straight, two-lipped. *Upper lip* tall, notched, acute. *Lower lip* shorter, cloven, acute. *Segments* standing wide.

BLOSS. one petal, gaping. *Tube* much more slender than the cup. *Mouth* but little thicker than the tube. *Upper lip* upright, rounded, entire. *Lower lip* expanding, with three segments, blunt; *middle Segment* larger, flat, entire.

STAM. *Filaments* four, the two inner ones shorter than the outer ones, awl-shaped, standing under the upper lip. *Anthers* blunt, (two-lobed, converging in pairs forming a double cross. E.)

PIST. *Germen* blunt, four-cleft, downy. *Styles* thread-shaped, in length and situation similar to the stamens. *Summit* cloven, acute.

S. VESS. none.

SEEDS four, (oval, small, in the bottom of the open, unaltered calyx.

OBS. The lower lip of the calyx is sometimes scolloped. Linn.

SCUTELLA'RIA. (SKULL-CAP. E.) Tourn. 84. Cassida.

CAL. *Cup* one leaf, very short, tubular. *Rim* almost entire, (orifice slightly two-lipped, in four shallow, obtuse, entire lobes. Sm. E.) after flowering closed by a lid, which is formed by an expansion of the upper part of the cup.

BLOSS. one petal, gaping. *Tube* very short. *Mouth* long, compressed, (ascending, dilated upward. E.) *Upper lip* concave, three-clefts. *Middle Segment* concave, notched at the end. *Lateral Segments* flat, acute, placed under the middle segment. *Lower lip* broad, (in three shallow lobes. E.)

STAM. *Filaments* four, two long and two short, concealed beneath the upper lip. *Anthers* small, (roundish, incumbent, two-lobed. E.)

PIST. *Germen* four-lobed. *Style* thread-shaped, in length and situation similar to the stamens. *Summit* simple, incurved, taper.

S. VESS. none. The *Cup* triangular, covered with a lid, resembling a helmet, answering the purpose of a capsule, and opening at the lower margin.

SEEDS four, roundish.

OBS. This genus is abundantly distinguishable from all others by its singular and beautiful calyx, which, inclosing the seeds as a seed-vessel, resembles, in its external appearance, a helmet with its crest.

PRUNEL'LA. (SELF-HEAL. E.) Tourn. 84. (Sm. E.)

CAL. *Cup* one leaf, with two lips, mouth short, permanent. *Upper lip* flat, broad, lopped, with three very small teeth. *Lower lip* upright, narrow, acute, cloven.

BLOSS. one petal, gaping. *Tube* short, cylindrical. *Mouth* oblong. *Upper lip* concave, entire, inflexed. *Lower lip* reflexed, blunt, with three segments, the *middle Segment* broadest, notched at the end, serrated.

STAM. *Filaments* four, two a little longer than the other two, awl-shaped, forked at the end. *Anthers* (on the lower branch of each filament, opening transversely by two valves. E.)

PIST. *Germen* four-lobed. *Style* thread-shaped, leaning as the stamens toward the upper lip. *Summit* bifid, (in two sharp recurved points. E.)

S. VESS. none.

SEEDS four, somewhat egg-shaped; (in the bottom of the closed, dry, reticulated calyx. E.)

Obs. The Essential Character consists in the forked filament, as in the genus *Crambe*. Linn.

ANGIOSPERMIA.

BARTSIA. (PAINTED-CUP. E.) *Lightf.* 14. (Sm. E.)

CAL. *Cup* one leaf, tubular, permanent. *Mouth* blunt, cloven. *Segments* notched at the end, points (generally, E.) coloured.

BLOSS. one petal, gaping. *Upper lip* upright, slender, (concave, E.) entire, longer. *Lower lip* reflexed, with three clefts, blunt, very small.

STAM. *Filaments* four, two a little shorter than the other two, bristle-shaped, as long as the upper lip, incurved. (E.) *Anthers* oblong, incumbent, (of two cells, opening longitudinally in front, E.) situated under the upper lip.

PIST. *Germen* egg-shaped. *Style* thread-shaped, longer than the stamens, (curved. E.) *Summit* blunt, (undivided. E.)

S. VESS. *Capsule* egg-shaped, compressed, pointed, with two cells and two valves, partition contrary to the valves, finally splitting lengthwise, and each portion bearing a longitudinal receptacle. (E.)

SEEDS numerous, angular, small, (attached by their inner edge to each receptacle. E.)

Obs. This genus would appear to be a connecting link between *Rhinanthus*, *Euphrasia*, and *Pedicularis*, but is distinguished by its coloured calyx. Linn. If the coloured calyx be admitted as an Essential generic mark, nearly half the Order must be placed in it. Woodward. And *B. viscosa* has a calyx not at all coloured. Giddy.

RHINANTHUS. (YELLOW-RATTIE. E.) *Tourn.* 77. *Pedicularis*. *Gartn.* 54.

CAL. *Cup* one leaf, roundish, inflated, compressed, with four clefts, permanent.

BLOSS. one petal, gaping, (but not widely open. E.) *Tube* nearly cylindrical, as long as the cup. *Border* compressed at the base. *Upper lip* helmet-shaped, compressed, notched at the end, narrower. *Lower lip* expanded, with three shallow clefts, blunt; the middle Segment the broadest.

STAM. *Filaments* four, two long and two short, nearly as long as the upper lip which conceals them. *Anthers* fixed sideways, two-lobed, hairy.

PIST. *Germen* egg-shaped, compressed, (grooved. E.) *Style* thread-shaped, agreeing in situation with the stamens, but longer. *Summit* blunt, incurved.

S. VESS. *Capsule* blunt, upright, compressed, cells two, valves two, partition opposite to the valves, opening at the edges.

SEEDS (eight to twelve in each cell, imbricated, E.) compressed.

Obs. *R. Crista-galli* has a bordered capsule; seeds surrounded by a loose membrane; and a calyx equal, with four clefts. Linn.

EUPHRA'SIA. (EYE-BRIGHT. E.) *Tourn.* 78. *Gærtn.* 54.
(Sm. E.)

CAL. *Cup* (tubular, cylindrical, four-toothed, permanent. E.)

BLOSS. one petal, gaping. *Tube* as long as the cup, (cylindrical. E.) *Upper lip* concave, (with several notches. E.) *Lower lip* expanding, with three divisions.

STAM. *Filaments* four, thread-shaped, reclining under the upper lip. *Anthers* two-lobed, the lower lobes of the lower anthers mucronated at their base.

PIST. *Germen* egg-shaped. *Style* thread-shaped, in shape and situation similar to the stamens. *Summit* blunt, entire.

S. VESS. *Capsule* egg-oblong, compressed, two-celled, (and two membranous valves. E.) *Partition* opposite to the valves.

SEEDS numerous, very small, roundish, striated. E.)

MELAMPY'RUM. (COW-WHEAT. E.) *Tourn.* 78. *Gærtn.* 53.

CAL. *Cup* tubular, with four clefts. *Segments* long, slender, permanent.

BLOSS. one petal, gaping. *Tube* oblong, curved. *Border* compressed. *Upper lip* helmet-shaped, compressed, notched at the end; lateral margins reflexed. *Lower lip* flat, upright, as long as the upper, with three shallow segments, blunt, and two protuberances on the palate.

STAM. *Filaments* four, two long and two short, awl-shaped, incurved, concealed under the upper lip. *Anthers* oblong, (diverging, each of two oblong, pointed lobes. E.)

PIST. *Germen* tapering to a point. *Style* thread-shaped, inclosed in the blossom. E.) *Summit* blunt, deflexed. E.)

S. VESS. *Capsule* oblong, obliquely pointed, compressed; upper edge convex, lower edge straight; cells two, valves two, *partition* opposite to the valves, opening at the upper seam.

SEEDS (two in each cell, egg-shaped, gibbous, elongated into a short pedicle by which they are attached to the base of the partitions. E.)

(**Obs.** According to Gærtner and Hooker only a single seed in each cell. E.)

LATHRÆA. (TOOTH-WORT. E.) *Tourn.* 424. *Clandestina.*
Gærtn. 52.

CAL. *Cup* one leaf, bell-shaped, straight. *Mouth* with four deep clefts.

BLOSS. one petal, gaping. *Tube* longer than the cup. *Border* gaping, ventricose. *Upper lip* concave, helmet-shaped, broad, with a narrow hooked top. *Lower lip* smaller, reflexed, blunt, three-cleft.

Nectary a gland notched at the end, depressed on each side, short, situated upon the receptacle at the lower side of the germen.

STAM. *Filaments* four, awl-shaped, (shorter than, E.) the blossom, concealed under the upper lip. *Anthers* blunt, depressed, converging.

PIST. *Germen* globular, compressed. *Style* thread-shaped, in length and situation similar to the stamens. *Summit* lopped, (notched, deflexed. E.)

S. VESS. *Capsule* roundish, blunt, but furnished with a small point, with one cell, and two elastic valves, enlarged, invested by the inflated calyx.

SEEDS (moderately numerous, rough, globular, fixed to a receptacle in the middle of each valve. E.)

OBS. Parasitical, partly subterraneous, in general habit resembling *Orobanchæ*, and particularly as regards the nectariferous gland. E.)

PEDICULARIS. (LOUSE-WORT. E.) *Tourn.* 77. *A. D. E.*
H. I. K. L. *Gærtn.* 53.

CAL. *Cup* one leaf, roundish, ventricose. *Mouth* with five clefts, permanent.

BLOSS. one petal, gaping. *Tube* oblong. *Upper lip* vaulted, upright, compressed, narrower, notched. *Lower lip* expanding, flat, with three segments, blunt. *Middle Segment* the narrowest.

STAM. *Filaments* four, two long and two short, nearly as long as the upper lip, under which they lie concealed. *Anthers* fixed sidewise, compressed, (two-lobed. E.)

PIST. *Germen* roundish. *Style* thread-shaped, longer than the stamens. *Summit* simple, incurved.

S. VESS. *Capsule* roundish, sharp-pointed, oblique, two-celled, (and two-valved, E.) opening at the top. *Partition* opposite to the valves.

SEEDS (about ten, E.) egg-shaped, angular. *Receptacles* nearly globular, in the base of the capsule.

OBS. *Capsule* for the most part oblique. In some species the cup is cloven at the rim into two segments. (Nectary a gland under the germen. Sm. E.)

ANTIRRHINUM. (SNAP-DRAGON. TOAD-FLAX. E.) *Tourn.*
75 and 76, *Linaria.* *Gærtn.* 53.

CAL. *Cup* with five divisions, permanent. *Segments* oblong, the two lower more expanding.

BLOSS. one petal, gaping. *Tube* oblong, gibbous. *Border* with two lips. *Upper lip* cloven, reflexed at the sides. *Lower lip* with three clefts, blunt. *Palate* convex, mouth generally closed by a projection of the lower lip, which is channelled on the under side.

Nectary a more or less elongated spur from the base of the blossom.

STAM. *Filaments* four, two short and two long, nearly as long as the blossom, and inclosed by the upper lip. *Anthers* converging.

PIST. *Germen* roundish. *Style* simple, equal to the stamens. *Summit* blunt.

S. VESS. *Capsule* roundish, blunt, cells two. Figure and manner of opening varying in different species.

SEEDS numerous. *Receptacle* (oblong, cylindrical, slightly tubercled. E.)

OBS. The nectary and the seed-vessel vary greatly in the different species. In some, the former is long and awl-shaped, and the latter opens equally. In others, the nectary is blunt, scarcely protuberating; the capsule unequal at the base, opening at the top obliquely; and, in others again, still different. (Dr. Hooker describes the capsule as "opening at the extremity with minute valves." E.)

SCROPHULARIA. (FIGWORT. E.) *Tourn.* 74. *Gærtn.* 53.

CAL. *Cup* one leaf, with five clefts, permanent. *Segments* rounded, shorter than the blossom.

BLOSS. one petal, unequal. *Tube* globular, large, inflated. *Border* very small, with five divisions. The two upper *Segments* larger than the others, upright; the two lateral ones open; the lower reflexed.

STAM. *Filaments* four, strap-shaped, declining, shorter than the blossom; two of them ripening later than the other two. *Anthers* double.

PIST. *Germen* egg-shaped. *Style* simple, the length of the stamens. *Summit* simple.

S. VESS. *Capsule* roundish, pointed, cells two, valves two, partition formed by the inflexed margins of the valves opening at the top.

SEEDS numerous, small, (angular. E.) *Receptacle* globular, extending itself into each cell.

OBS. In the mouth of the blossom, beneath the upper segments, lies another little segment resembling a lip, (an internal intermediate scale, or "abortive stamen," according to Professor Hooker; E.) but this is not common to every species. The blossom, in this genus, may be considered as reversed. The upper lip smaller, bowed back; rounded, the stamens bowed down towards it; the lateral segments scalloped, rounded, equal to the upper; the lower lip larger, open, with two divisions; the intermediate lip very small, placed in the fore part. *Limn.*—When ripe, an oval opening appears in the partition. *Gærtn.*

DIGITALIS. (FOX-GLOVE. E.) *Tourn.* 73. *Gærtn.* 53.

CAL. *Cup* with five divisions. *Segments* roundish, acute, permanent, the upper narrower, (much shorter than the blossom, E.)

BLOSS. one petal, bell-shaped. *Tube* large, expanding, gibbous on the under side, cylindrical and contracted at the base. *Border* small, with four clefts. *Upper Segment* most expanded, notched at the end. *Lower Segment* largest.

STAM. *Filaments* four, two long and two short, awl-shaped, fixed to the base of the blossom, declining. *Anthers* cloven, tapering to a point at one end.

PIST. *Germen* ovate, pointed. *Style* thread-shaped, as long as the stamens. *Summit* acute, (cloven. E.)

S. VESS. *Capsule* egg-shaped, as long as the cup, pointed, cells two, valves two, tearing open in two directions. *Partition* double, formed by the edges of the valves, turned in.

SEEDS small, numerous, (slightly angular. E.)

LINNÆA. (LINNÆA. E.) *Fl. Dan.* 3.

CAL. *Cup* double.

Cup of the *Fruit* beneath, four-leaved: two leaflets opposite, very small, acute, the other two elliptical, concave, upright, rough with hairs, (glandular, finally enlarged and closed over the interior leaves and fruit. E.)

Cup of the *Flowers* superior, of one leaf with five divisions, upright, slender, acute, equal.

BLOSS. one petal, bell-shaped, with five clefts, blunt, nearly equal, twice the size of the flower cup.

STAM. *Filaments* four, awl-shaped, springing from the base of the blossom, two very small, the other two near together, longer, but shorter than the blossom. *Anthers* compressed, vane-like, (incumbent. E.)

PIST. *Germen* globular, beneath. *Style* thread-shaped, straight, declining, as long as the blossom. *Summit* globular.

S. VESS. *Berry* juiceless, egg-shaped, three-celled, (only one bearing a single perfect seed. *Involucre* of two leaves just below the germen. Hook. or according to Sm. closely invested with the inferior calyx, and crowned with the superior one. E.)

SEEDS two, roundish.

(Obs. On the authority of Wahl, never ripening, more than one seed. E.)

SIBTHORPIA. (SIBTHORPIA. E.) *Gartn.* 55.

CAL. *Cup* one leaf, turban-shaped, with five divisions, expanding; leaflets egg-shaped, permanent.

BLOSS. one petal, with five divisions, expanding, equal, as long as the cup. *Segments* rounded.

STAM. *Filaments* four, hair-like, converging in pairs. *Anthers* heart-oblong, (of two-lobes. E.)

PIST. *Germen* roundish, compressed. *Style* cylindrical, thicker than the filaments, as long as the blossom. *Summit* a simple knob, flattened.

S. VESS. *Capsule* (small, E.) compressed, (inversely heart-shaped, E.) ventricose on each side, edges acute, valves two, cells two, partition transverse.

SEEDS (about six in each cell, E.) roundish-oblong, convex on one side, flat on the other. *Receptacle* globular, fixed to the middle of the partition.

LIMOSELLA. (MUDWORT. E.) *Gærtn.* 50. (Sm. E.)

CAL. *Cup* one leaf, with five clefts, acute, upright, permanent.

BLOSS. one petal, somewhat bell-shaped, upright, equal, with five clefts, acute, small, (tube cylindrical, the length of the calyx. E.) *Segments* expanding, (the two uppermost concave, lower one smallest. E.)

STAM. *Filaments* four, (from the mouth of the tube, awl-shaped, almost equal, shorter than the limb, sheltered by its two upper segments, but spreading slightly laterally, and converging in pairs. E.) *Anthers* (of two lobes. E.)

PIST. *Germen* oblong, blunt, of two cells. *Style* simple, as long as the stamens, declining. *Summit* globular, (cloven. E.)

S. VESS. *Capsule* egg-shaped, half inclosed in the cup, with one cell, and two valves. *Partitions* (narrow, from the inflexed margins of the valves. E.)

SEEDS (numerous, oblong, furrowed, transversely wrinkled. E.) *Receptacle* egg-shaped, large, (central. E.) The capsule in its immature state appears to have two imperfect cells. E.)

OROBANCHÉ. (BROOM-RAPE. E.) *Tourn.* 81. (Sm. E.)

CAL. *Cup* (of two lateral, spear-shaped, E.) coloured, permanent leaves.

BLOSS. one petal, gaping. (*Tube* curved, enlarged. E.) *Border* expanding. *Upper lip* concave, open, notched. *Lower lip* reflexed, with three wavy lobes. *Segments* nearly equal.

STAM. *Filaments* four, two long and two short, awl-shaped, concealed under the upper lip. *Anthers* (incumbent, of two lobes. E.)

Nectary a gland at the base of the germen.

PIST. *Germen* oblong. *Style* simple, incurved, in length and situation similar to the stamens. *Summit* with a shallow cleft, (of two or three distinct lobes, deflexed. E.)

S. VESS. *Capsule* egg-oblong, pointed, with one cell, and two valves.

SEEDS numerous, very small. *Receptacles* four, strap-shaped, lateral, connected, (two proceeding from the middle part of each valve. E.)

CLASS XV.

TETRADYNAMIA.

THIS Class comprehends the *Cruciferae*, a natural tribe of plants, having cruciform blossoms, of four petals, and six stamens, four of them longer than the other two; but as this latter circumstance is not always perfectly obvious, it may be well to recollect that none of the plants of the Hexandria Class have exactly four petals.

The Orders are two, and are distinguished by the figure of the seed-vessel, which in the first Order is a broad and short Pouch; that is, a roundish flat seed-vessel, furnished with a *Style*, which is frequently as long as the seed-vessel itself.* In the second Order, the seed-vessel is a long Pod; that is, a very long seed-vessel, without any remarkable *Style*.

The seed-vessel has also hitherto been considered as principally discriminative of the Genera; which, however, were involved in much intricacy, until Gærtner proposed, and Mr. Brown in the "*Hortus Kewensis*," more fully developed, unequivocal characters, deduced from the form and position of the *cotyledons*. These suggestions have been followed by De Candolle, Smith, Hooker, and other high authorities; nor can we hesitate to adopt them, so far as to incorporate them with the more complete descriptions, at the same time regretting the necessity for attaching so much importance to parts so minute, and only available at limited seasons; though it has been justly remarked that, in these instances, the *embryo* being surrounded by no *albumen*, offers itself to examination immediately upon breaking the external coat of the seed, when the distinction between *accumbent* and *incumbent* cotyledons becomes manifest. E.)

The Plants of this Class admit of the following

NATURAL CHARACTER.

CAL. *Cup* oblong, of four leaves, deciduous., *Leaflets* egg-oblong, concave, blunt, converging, standing in opposite pairs, gibbous at the base.

Nectary of two or four glands at the base of the stamens, (especially within the two shortest, which curve outwards to prevent the compression of the glands. E.)

BLOSS. cruciform. *Petals* four, equal. *Claws* awl-shaped, upright, generally longer than the *cup*. *Border* flat. *Limbs* broadest towards the end, blunt, hardly touching one another at the edges. *Petals* fixed in the same circle with the stamens.

STAM. *Filaments* six, awl-shaped, upright, the two opposite ones as long as the cup, the other four somewhat longer, but shorter than the blossom. *Anthers* oblong, tapering to a point, upright.

PIST. *Germen* superior, lengthening daily. *Style* the length of the longest stamens, but in some genera wanting. *Summit* blunt, (permanent. E.)

S. VESS. *Pod* with two valves, often with two cells, opening from the base to the point. *Partition* projecting beyond the points of the valves, and occupying the place of the style.

SEEDS roundish, (or flattened, on slender stalks, from both sides of the receptacle, which borders the partition. *Albumen* none. *Cotyledons* two, either flat or folded, or spiral; either *incumbent*, lying upon the *embryo* laterally, or *accumbent*, their edges at one side meeting the *embryo* longitudinally. E.)

Obs. The plants of this Class are universally called Anti-scorbutic: their taste is acrid and watery; they lose most of their virtues by drying. None of them are poisonous. (Seeds warm and pungent. Smith. E.)

In moist situations and in wet seasons, they are most acrimonious. Thus the *Cochlearia Armoracia*, (Horse-radish,) growing near water, is so very acrid, that it can scarcely be used; and *Brassica Rapa*, (Turnip,) whose root in a dry sandy soil is succulent and sweet, in wet stiff lands, is hard and acrimonious.

TETRADYNAMIA. (Four Stamens longer.)

SILICULOSA. (A Pouch, or broad Pod.)

<i>Alyssum.</i>	<i>Vella.</i>	<i>Thlaspi.</i>
<i>Cakile.</i>	<i>Sylbularia.</i>	<i>Cochlearia.</i>
<i>Camelina.</i>	<i>Draba.</i>	<i>Coronopus.</i>
<i>Crambe.</i>	<i>Lepidium.</i>	<i>Iberis.</i>
<i>Isatis.</i>	<i>Teesdalia.</i>	

SILIQUOSA. (A long Pod.)

<i>Dentaria.</i>	<i>Erysimum.</i>	<i>Turritis.</i>
<i>Cardamine.</i>	<i>Cheiranthus.</i>	<i>Brassica.</i>
<i>Nasturtium.</i>	<i>Hesperis.</i>	<i>Sinapis.</i>
<i>Sisymbrium.</i>	<i>Arabis.</i>	<i>Raphanus.</i>
<i>Barbarea.</i>		

SILICULOSA.

ALYS'SUM. (ALYSSUM. E.) Schreb. G. Pl. Linn. 1081.
(Br. Sm. E.)

CAL. Cup four leaves, oblong; leaflets egg-oblong, blunt, approaching, deciduous.

BLOSS. Four petals, forming a cross. Petals flat, shorter than the calyx, widely expanding; claws as long as the calyx.

STAM. Filaments six, simple, as long as the cup; the two opposite a little shorter than the others, and marked with little teeth. Anthers upright, spreading.

PIST. Germen egg-shaped. Style simple, as long as the stamens, longer than the germen. Summit blunt.

S. VESS. Pouch roundish, sides tumid, crowned with the styles, two-celled; partition elliptical; valves parallel with the partition.

SEEDS (one or two in each cell, oval, compressed, rarely bordered; cotyledons accumbent. E.)

OBS. In some species the petals are notched at the end, in others entire: the pouch likewise appears inflated, or flattened. E.)

(CAKILE. SEA ROCKET. Tourn. 483. Gartn. 141. Br.
• in Ait. Hort. Kew. De Cand. Syst. Lam. 554. Bunias,
Linn.

CAL. nearly close and erect; leaves obovate, oblong, deciduous, two opposite ones protuberant at the base.

BLOSS. Petals obovate, obtuse, spreading; claws as long as the border, equal to the calyx.

STAM. Filaments awl-shaped, simple. Anthers oblong, cloven at the base.

PIST. Germen oblong. Style none. Summit obtuse, sessile.

S. VESS. Pouch of two joints, angular, compressed; the lower somewhat turbinate, abrupt, often abortive; upper oblong, with a tapering point, tipped with the summit, deciduous; each of one cell, not bursting.

SEEDS solitary in each cell, elliptical; in the lower one, if present, pendulous; in the upper, erect; cotyledons linear, accumbent. Sm. Eng. Fl. E.)

(CAMELINA. GOLD OF PLEASURE. Crantz. Austr. Br.
in Ait. Hort. Kew. De Cand. Syst. Myagrum, Linn.
Monchia, With. Alyssum, Fl. Brit.

CAL. equal at the base, oblong, deciduous; leaves elliptic-oblong, uniform, moderately spreading.

BLOSS. Petals obovate-oblong, undivided, their claws rather shorter than the spreading border.

STAM. *Filaments* thread-shaped, simple. *Anthers* oblong, heart-shaped.

PIST. *Germen* roundish. *Style* cylindrical, erect. *Summit* simple, obtuse.

S. VESS. *Pouch* obovate, obtuse, rarely globular, tumid, of two cells; valves concave; confluent with the permanent style; *partition* membranous.

SEEDS numerous in each cell, oblong, compressed, not bordered; cotyledons incumbent.

Obs. The name of *Myagrum* properly belongs to this genus, but that is now appropriated to *M. perfoliatum*, and *Camelina* has long been applied to our plant. Sm. Eng. Fl. E.)

CRAM'BE. (KALE. E.) *Tourn.* 100, and 99, *Rapistrum.* *Gartn.* 142. (Br. Sm. E.)

CAL. *Cup* four leaves; *leaflets* egg-shaped, channelled, rather expanding, deciduous.

BLOSS. four petals, forming a cross. *Petals* large, blunt, broad, expanding; *claws* upright, but standing rather open, as long as the cup.

STAM. *Filaments* six, two of them as long as the cup, the other four longer, and cloven at the end. *Anthers* simple, fixed to the outermost division of the filaments.

Nectariferous Glands disposed on each side, between the blossom and the longer stamens.

PIST. *Germen* oblong. *Style* none. *Summit* rather thick, (obtus. E.)

S. VESS. *Pouch* succulent, finally leathery, of two joints, each of one cell, not bursting; the lowermost abortive, assuming the form of a stalk; the upper globular, deciduous.

SEED solitary, globose, pendulous from the extremity of a long, curved, capillary stalk, springing from the bottom of the cell; cotyledons roundish, convex, fleshy, folded, accumbent. E.)

ISATIS. (Woad. E.) *Tourn.* 100. *Gartn.* 142. (Br. Sm. E.)

CAL. *Cup* four leaves; *leaflets* egg-shaped, rather expanding, coloured, deciduous.

BLOSS. four petals, forming a cross. *Petals* oblong, blunt, expanding, gradually tapering into *claws*.

STAM. *Filaments* six, upright, but expanding, as long as the blossom, two of them shorter. *Anthers* oblong, lateral.

PIST. *Germen* oblong, two-edged, compressed, as long as the shorter stamens. *Style* none. *Summit* a blunt knob.

S. VESS. *Pouch* oblong-spear-shaped, blunt, compressed, two-edged, with one cell, not opening. *Valves* two, boat-shaped, compressed, keeled, deciduous.

SEED (solitary, ovate-oblong, pendulous at the top of the cell; cotyledons flattish, incumbent. E.)

VELLA. (CRESS-ROCKET. E.) *Gartn.* 141. (Br. Sm. E.)

CAL. Cup four leaves, upright, cylindrical; leaflets strap-shaped, blunt, deciduous.

BLOSS. four petals, forming a cross. Petals inversely egg-shaped, expanding; claws as long as the cup.

STAM. Filaments six, as long as the cup, the four opposite ones a little longer than the other two. Anthers simple.

PIST. Germen egg-shaped. Style conical. Summit (obtus. E.)

S. VESS. Pouch (ovate, terminated by the hardened style; valves concave; partition membranous, continued into the style.

SEEDS few in each cell, globose, pendulous; cotyledons folded together, accumbent. E.)

SUBULARIA. (AWL-WORT. E.) *Fl. Dan.* 35. (Br. Sm. E.)

CAL. Cup four leaves; leaflets egg-shaped, concave, a little expanding, deciduous.

BLOSS. four petals, forming a cross. Petals inversely egg-shaped, entire, rather larger than the cup.

STAM. Filaments six, shorter than the blossom, the two standing opposite still shorter. Anthers (of two round lobes. E.)

PIST. Germen egg-shaped (compressed. E.) Style (none. E.) Summit (flat, sessile. E.)

S. VESS. Pouch egg-shaped, somewhat compressed, entire, (terminated by the summit. E.) Cells two. Partition (parallel to the valves, but crossing the narrowest diameter of the pouch. E.) Valves egg-shaped, concave.

SEEDS (ovate, four or more in each cell; cotyledons linear, incumbent. E.)

DRA'BA. (WHITLOW-GRASS. E.) *Gartn.* 141. (Br. Sm. E.)

CAL. Cup four leaves; leaflets egg-shaped, concave, somewhat expanding, deciduous.

BLOSS. four petals, forming a cross; petals oblong, rather expanding; claws minute.

STAM. Filaments six, as long as the cup, four opposite ones a little longer than the other two, upright, expanding. Anthers (two-lobed. E.)

PIST. Germen egg-shaped. Style scarcely any. Summit a flat knob.

S. VESS. Pouch oval-oblong, compressed, entire, without a style. Cells two. Partition parallel to the valves. Valves slightly concave.

SEEDS many in each cell, small, roundish; (cotyledons accumbent. E.)

Obs. In some species the petals are divided down to the base, in others they are only notched at the end, and in others again they are quite entire.

LEPID'IUM. (PEPPERWORT. E.) *Tourn.* 103. *Gærtn.* 141.
(*Br. Sm.* *Hutchinsia*, *Br. in Ait. Hort. Kew. E.*)

CAL. *Cup* four leaves; *leaflets* egg-shaped, concave, deciduous.

BLOSS. four petals, forming a cross; *petals* inversely egg-shaped, twice as long as the cup; *claws* narrow.

STAM. *Filaments* six, awl-shaped, as long as the cup, the two opposite ones shorter than the others. *Anthers* (two-lobed. E.)

PIST. *Germen* heart-shaped. *Style* simple, as long as the stamens. *Summit* blunt.

S. VESS. *Pouch* orbicular, notched at the end, compressed, sharp at the edge. *Cells* two. *Valves* boat-shaped, keeled. *Partition* spear-shaped, placed in a contrary direction to the valves.

SEEDS (one in each cell, pendulous, ovate, somewhat angular, or flattened; cotyledons oblong, incumbent. E.)

OBS. *L. anglicum*, and *L. rudérale* have either two or four stamens only.

(TEESDA'LIA. TEESDALIA. Br. in Ait. Hort. Kew. Tr.
Linn. Soc. De Cand. Syst. Iberis, Linn.

CAL. equal at the base, with spreading, ovate, concave, nearly equal, deciduous leaves.

BLOSS. *Petals* obovate, undivided, spreading, either equal or unequal, the two outermost in the latter case much the largest.

STAM. *Filaments* cylindrical, sometimes but four, shorter than the corolla, incurved, each bearing an ovate, petal-like scale, at the inner side, just above the base. *Anthers* of two round, distinct, converging lobes.

PIST. *Germen* roundish, two-lobed, rather compressed. *Summit* glo-bular, sessile.

S. VESS. *Pouch* transversely compressed, roundish, concave on one side; bordered at the summit and cloven; of two *cells*, and two boat-like valves, with dilated keels; *partition* lanceolate, narrow, contrary to the greater diameter of the pouch.

SEEDS two in each cell, roundish, compressed; cotyledons, according to De Candolle, accumbent, nearly orbicular. *Sm. Eng. Fl. E.*)

THLAS'PI. (SHEPHERD'S PURSE. MITHRIDATE MUS-
TARD. E.) *Tourn.* 101. *Gærtn.* 141. (*Br. Sm. E.*)

CAL. *Cup* four leaves; *leaflets* egg-shaped, concave, somewhat expand-ing, deciduous.

BLOSS. four petals, forming a cross; *petals* inversely egg-shaped, twice as long as the cup; *claws* (rather broad. E.)

STAM. *Filaments* six, half as long as the blossom, the two opposite ones shorter than the others. *Anthers* tapering to a point, (somewhat heart-shaped. E.)

PIST. *Germen* circular, compressed, notched. *Style* simple, as long as the stamens. *Summit* blunt.

S. Vess. *Pouch* compressed, inversely heart-shaped, notched at the end, the depth of the notch being equal to the length of the style. *Cells* two. *Partitions* spear-shaped. *Valves* keeled, bordered. SEEDS (several in each cell, ovate; cotyledons accumbent. E.)

COCHLEARIA. (SCURVY-GRASS. E.) *Tourn.* 101. (Br. Sm. E.)

CAL. *Cup* four leaves; *leaflets* egg-shaped, concave, expanding, deciduous.

BLOSS. four petals, forming a cross. *Petals* inversely egg-shaped, expanding, twice as large as the cup; *claws* shorter than the cup.

STAM. *Filaments* six, awl-shaped, (incurved, E.) as long as the cup, the two opposite ones shorter than the others. *Anthers* blunt, compressed.

PIST. *Germen* (roundish. E.) *Style* very short, permanent. *Summit* blunt.

S. Vess. *Pouch* turgid, two-celled, notched at the end, furnished with a style, rugged. *Valves* (concave, scarcely keeled. E.)

SEEDS, about four in each cell; (cotyledons flat, accumbent. E.)

(CORONOPUS. SWINE'S-CRESS. DITTANDER. *Gærtn.* 142. *Fl. Brit.* 298. *Senebiera. De Cand.*

CAL. *Cup* four leaves; *leaflets* roundish, concave, blunt, large in proportion to the petals, deciduous.

BLOSS. four petals, forming a cross. *Petals* equal in size, extremely minute, egg-shaped.

STAM. *Filaments* two, four, or six, awl-shaped, as long as the cup. *Anthers* roundish.

PIST. *Germen* roundish. *Style* simple, much shorter than the stamens. *Summit* blunt.

S. Vess. *Pouch* kidney-shaped, compressed, rugged, not notched at the end, but furnished with a short projecting style; distinctly two-celled.

SEEDS, one in each cell (cotyledons incumbent, oblong, folded or channelled. E.)

IBERIS. (CANDY-TUFT. E.) *Gærtn.* 141. (Br. Sm. E.)

CAL. *Cup* four leaves; *leaflets* inversely egg-shaped, concave, expanding, equal, deciduous.

BLOSS. four petals, unequal. *Petals* inversely egg-shaped, blunt, expanding, the two outer ones much larger, equal, the two inner small, reflexed; *claws* oblong, upright.

STAM. *Filaments* six, awl-shaped, upright, the two lateral ones shortest. *Anthers* roundish.

PIST. *Germen* roundish, compressed, (notched at the summit. E.) *Style* simple, short. *Summit* blunt.

S. VESS. *Pouch* (ovate, transversely compressed, cloven at the top into two acute lobes, between which stands the permanent, somewhat elongated style. E.) *Cells* two. *Partition* spear-shaped. *Valves* boat-shaped, keeled, compressed.

SEEDS (solitary in each cell, pendulous, ovate; cotyledons ovate, flat, accumbent. E.)

SILIQUOSA.

DENTARIA. (CORAL-WORT. *Tourn.* 110. *Br. De Cand.* Sm. E.)

CAL. *Cup* four leaves; *leaflets* egg-oblong, approaching towards the top, blunt, deciduous.

BLOSS. four petals, forming a cross. *Petals* nearly circular, blunt, ending in *claws* shorter than the cup.

STAM. *Filaments* six, awl-shaped, as long as the cup, two of them shorter. *Anthems* (arrow-shaped, E.) upright.

PIST. *Germen* oblong. *Style* short and thick. *Summit* blunt, slightly notched at the end.

S. VESS. *Pod* (sessile, lanceolate, compressed laterally, tapering upwards. E.) *Valves* two, flat, opening elastically, the valves rolling back. *Partition* rather longer than the valves.

SEEDS egg-shaped (not bordered, inserted alternately in a single row; their stalks dilated and winged; cotyledons accumbent, rather thick. E.)

(Obs. Distinguished from *Cardamine* especially by its lanceolate pod, and seeds with dilated stalks, peculiarities indicated by De Candolle. E.)

CARDAMINE. (LADIES'-SMOCK. E.) *Tourn.* 109. *Gærtn.* 143. (Br. Sm. E.)

CAL. *Cup* four leaves; *leaflets* egg-oblong, blunt, rather open, pro-tuberant, deciduous.

BLOSS. four petals, forming a cross. *Petals* oblong-egg-shaped, greatly expanded, ending in *claws*, which are upright, and twice as long as the cup.

STAM. *Filaments* six, awl-shaped, the two opposite ones twice as long as the cup, (with a gland at the base, E.) the other four still longer. *Anthems* small, heart-oblong, (recurved. E.)

PIST. *Germen* slender, cylindrical, as long as the stamens. *Style* none. *Summit* a blunt knob, entire.

S. VESS. *Pod* (sessile, E.) long, cylindrical, but compressed. *Cells* two. *Valves* two, (bursting laterally from the base, and mostly revolute. E.)

SEEDS roundish; (not bordered, inserted alternately in a single row, their stalks simple, short, and slender; cotyledons accumbent. E.)

(Obs. One species is often found destitute of the two shorter stamens; in others the petals are wanting.)

(NASTURTIUM. CRESS. *Br. in Ait. Hort. Kew. De Cand. Syst. Sisymbrium. Linn.*

CAL. equal at the base; leaves ovate-oblong, obtuse, spreading, somewhat coloured, deciduous.

BLOSS. *Petals* obovate, spreading, undivided, tapering into short claws; occasionally wanting.

STAM. *Filaments* awl-shaped, simple; the two shortest, each with a gland at the base within-side. *Anthers* incumbent, somewhat heart-shaped.

PIST. *Germen* cylindrical. *Style* erect, short, cylindrical. *Summit* obtuse, notched.

S. VESS. nearly cylindrical, rather turgid; shortish; valves concave, without ribs or keel.

SEEDS roundish, flattened, without a border, irregularly disposed, on slender stalks; cotyledons accumbent.

Mr. Brown has happily separated this genus from *Sisymbrium*, with which its various species have long been thought; by the most experienced Botanists, to disagree, as much as they agree among themselves. The accumbent cotyledons decide the question; and the short, thick, turgid pods afford a ready and obvious character. Sm. Eng. Fl. E.)

SYSIMBRIUM. (ROCKET. HEDGE-MUSTARD. E.) *Tourn.* 109. (*Br. Sm. E.*)

CAL. *Cup* four leaves; *leaflets* spear-strap-shaped, expanding, coloured, deciduous.

BLOSS. four petals, forming a cross. *Petals* oblong, expanding, (blunt, undivided; *claws* nearly the length of the calyx. E.)

STAM. *Filaments* six, longer than the cup, the two opposite ones, somewhat shorter. *Anthers* (oblong-heart-shaped. E.)

PIST. *Germen* linear, slender, sessile. E.) *Style* very short. *Summit* (capitate, notched, permanent. E.)

S. VESS. *Pod* cylindrical, (or slightly angular. *Valves* linear, concave, wavy; partition narrow, membranous. E.)

SEEDS (ranged alternately, forming a single row, numerous, small, ovate, or oblong, not bordered; cotyledons flat, incumbent, sometimes (according to Mr. Brown) obliquely. E.)

Obs. (Pods erect, in very long clusters. E.) *S. sophia* has petals shorter than the cup.

(BARBA'REA. WINTER-CRESS. *Br. in Ait. Hort. Kew. De Cand. Syst. Erysimum. Linn.*

CAL. nearly equal at the base, erect; leaves oblong, concave, somewhat coloured, deciduous.

BLOSS. *Petals* obovate, obtuse, undivided, flat; *claws* nearly the length of the calyx.

STAM. *Filaments* awl-shaped, simple, distinct, erect, with a *gland* at each side between the two shorter ones and the *pistil*.

PIST. *Germen* oblong, quadrangular. *Style* short, cylindrical. *Summit* obtuse, simple.

S. VESS. *Pod* linear, with four angles, slightly compressed; valves concave, keeled, even and straight; partition membranous, thick-edged.

SEEDS ranged alternately, in a single row, ovate, flattish, not bordered; cotyledons flat, accumbent. Sm. Eng. Fl. E.)

ERYSIMUM. (TREACLE-MUSTARD. SAUCE-ALONE. E.)
Tourn. 111. *Gaertn.* 143. (Br. Sm. E.)

CAL. *Cup* four leaves; *leaflets* egg-oblong, parallel, but approaching, coloured, deciduous.

BLOSS. four petals, forming a cross. *Petals* oblong, flat, very blunt at the end; *claws* as long as the cup, upright.

Nectariferous Gland double on the inner side of the shorter filament.

STAM. *Filaments* six, as long as the cup, the two opposite ones shorter than the others. *Anthers* simple.

PIST. *Germen* strap-shaped, quadrangular, as long as the stamens. *Style* very short. *Summit* a small knob, (notched. E.) permanent.

S. VESS. *Pod* long, strap-shaped, stiff, and straight, exactly quadrangular, with two valves and two cells.

SEEDS many, small, roundish, not bordered, (disposed in a single row, cotyledons flat, incumbent. E.)

(Obs. Pods in long upright clusters. E.)

CHEIRANTHUS. (WALL-FLOWER. STOCK. E.) *Tourn.* 107,
Leucojum. *Gaertn.* 143. (*Matthiola.* Br. De Cand.
Sm. E.)

CAL. *Cup* four leaves, compressed; *leaflets* spear-shaped, concave, upright, parallel converging, deciduous, the two *outer* gibbous at the base.

BLOSS. four petals, forming a cross. *Petals* nearly circular, longer than the cup; *claws* as long as the cup.

STAM. *Filaments* six, awl-shaped, parallel, as long as the cup, two of them shorter and gibbous at the base, within the cup. *Anthers* upright, cloven at the base, acute, and reflexed at the top.

A *Nectariferous Gland* surrounding the base of the shorter stamen on each side.

PIST. *Germen* prism-shaped, with four edges, as long as the stamens, with a small tubercle on each side the base. *Style* very short, compressed. *Summit* oblong, divided, reflexed, thick, permanent.

S. VESS. *Pod* linear, compressed, the two opposite angles obliterated and marked with a little tooth; *cells* two, *valves* two.

SEEDS (ranged alternately in a single row, ovate, compressed, slightly bordered at the summit, and often at one side also; cotyledons accumbent. E.)

Obs. The little tooth on each side of the *germen*, in some species almost disappears, in others grows larger.

HES'PERIS. (DAME'S-VIOLET. E.) *Tourn.* 108. (Br. Sm. E.)

CAL. Cup four leaves; leaflets spear-strap-shaped, parallel, approaching towards the top, and lying on each other, wide at the base, deciduous, the two opposite ones protuberant at the base.

BLOSS. four petals, forming a cross. Petals oblong, the length of the cup, a little bent obliquely to the left, terminating in claws (linear, channelled, E.) as long as the cup.

STAM. Filaments six, awl-shaped, as long as the tube, two of them only half as long. Anthers strap-shaped, upright, recurved.

Nectariferous Glands tapering to a point, placed between the shorter stamens and the germen, surrounding the stamens.

PIST. Germen as long as the cup, prism-shaped, with four edges. Style none. Summit (nearly sessile, of two closely converging, erect, simple, obtuse, downy lobes, permanent, unchanged.

S. VESS. Pod linear, more or less accurately quadrangular, striated, protuberant from the seeds; valves linear, undulated, acute, the length of the membranous partition.

SEEDS in a single row, pendulous, oblong, obscurely triangular, not bordered; cotyledons flat, incumbent. E.)

A'RABIS. (WALL-CRESS. ROCK-CRESS. E.) *E. Bot.* 178. *Curt.* ii. 13. (Br. Sm. E.)

CAL. Cup four-leaved, deciduous; leaflets parallel, and approaching at the top, two of them opposite, egg-oblong, acute, larger, a little protuberant at the base, concave; the other two, strap-shaped, upright.

BLOSS. four petals, forming a cross. Petals egg-shaped, (entire, E.) expanding, terminating in claws, nearly as long as the cup.

Nectariferous Glands four, each composed of a little, permanent scale, fixed to the receptacle at the bottom, and on the inner side of the leaves of the cup; reflexed, permanent.

STAM. Filaments six, thread-shaped, upright, two as long as the cup, four twice as long. Anthers heart-shaped, (incumbent. E.)

PIST. Germen cylindrical, as long as the stamens. Style none. Summit blunt, entire.

S. VESS. Pod compressed, very long, strap-shaped, unequal from protuberances occasioned by the seeds. Valves as long as the partition.

SEEDS roundish, compressed, (in a single row, pendulous, oval or orbicular, compressed, with or without a border; cotyledons flat, incumbent. E.)

Obs. The nectaries and the summit demonstrate that it is neither a *Cheiranthus* nor a *Hesperis*. Linn.

TURRITIS. (TOWER-MUSTARD. E.) *Gärtn.* 143. (*Br. Sm.* E.)

CAL. *Cup* four leaves; *leaflets* egg-oblong, converging, deciduous.

BLOSS. four petals, forming a cross. *Petals* egg-oblong, blunt, upright, entire; *claws* upright.

STAM. *Filaments* six, thread-shaped, upright, as long as the tube, two of them shorter. *Anthers* (oblong, incumbent. E.)

PIST. *Germen* as long as the blossom, cylindrical, a little compressed. *Style* (very short. E.) *Summit* blunt, simple.

S. VESS. *Pod* exceedingly long, stiff and straight, with four edges, but two of the edges, which are opposite, almost obliterated, and somewhat compressed; *cells* two. *Valves* two, (as long as the membranous partition. E.)

SEEDS very numerous, disposed in a double row in each cell, crowded, obliquely pendulous, ovate, compressed, slightly bordered; cotyledons flat, accumbent. E.)

(**Obs.** This genus and *Arabis* were scarcely distinguishable till Mr. Brown suggested the double row of seeds as a peculiarity in *Turritis*. E.)

BRASSICA. (CABBAGE. TURNIP. E.) *Tourn.* 106, and 113, *Rapa.* *Gärtn.* 143. (*Br. Sm.* E.)

CAL. *Cup* four upright leaves; *leaflets* spear-strap-shaped, concave and channelled, protuberant at the base, parallel, deciduous.

BLOSS. four petals, forming a cross. *Petals* nearly egg-shaped, expanding, entire, gradually tapering into *claws*, which are nearly as long as the cup, (channelled. E.)

Nectariferous Glands four, egg-shaped, (two at the inside of the shorter filaments, two at the outside of the longer. E.)

STAM. *Filaments* six, awl-shaped, upright, the two opposite ones as long as the cup, the other four longer. *Anthers* (oblong, upright, a little recurved. E.)

PIST. *Germen* cylindrical, as long as the stamens. *Style* (tapering, making a beak to the pod. E.) *Summit* a knob, entire.

S. VESS. (*Pod* nearly cylindrical, beaked, of two concave valves, and two longitudinal cells, besides one in the beak, which is often barren.

SEEDS in a single row, nearly globular, with one or more occasionally in the beak; cotyledons folded, incumbent, their double edges meeting the radicle. E.)

Obs. In *B. Rapa* the cup and the blossom are of the same colour. Linn.

SINAPIS. (MUSTARD. CHARLOCK. L.) *Tourn.* 112.
Gartn. 143. (Br. Sm. E.)

CAL. *Cup* four leaves, (nearly flat at the base ; *leaflets* oblong, straight, spreading, almost horizontally from the very bottom, deciduous. E.)

BLOSS. four petals, forming a cross. *Petals* nearly circular, expanding, entire ; *claws* upright, strap-shaped, rather shorter than the cup, sessile.

Nectariferous Glands four, egg-shaped, one between each shorter stamen and the pistil, and one between each pair of longer stamens and the cup.

STAM. *Filaments* six, awl-shaped, upright, the two opposite ones as long as the cup, the other four longer. *Anthers* upright, but expanding, pointed.

PIST. *Germen* cylindrical. *Style* (very short. E.) *Summit* a knob, entire.

S. VESS. *Pod* oblong, with protuberances on the lower part, (terminating in an abortive or one-seeded beak. E.) *Cells* two. *Valves* two. *Partition* large, compressed, generally twice as long as the valves.

SEEDS (in a single row, nearly globular ; cotyledons folded, conduplicate, incumbent, their doubled edges meeting the radicle. E.)

Obs. Differs from *Brassica* in having the claws of the petals upright, and the leaflets of the calyx expanding. Linn. (The beak of the pod, in some, is little else than a permanent unaltered style. E.)

RAPHANUS. (RADISH. E.) *Tourn.* 114 and 115, *Raphanistrum.* *Gartn.* 143. (Br. Sm. E.)

CAL. *Cup* four leaves, upright ; *leaflets* oblong, parallel, converging, deciduous, (two of them slightly prominent at the base. E.)

BLOSS. four petals, forming a cross. *Petals* inversely heart-shaped, expanding ; *claws* a little longer than the cup, (erect. E.)

Nectariferous Glands four, one between each shorter stamen and the pistil, and one on each side, between the longer stamens and the cup.

STAM. *Filaments* six, awl-shaped, upright, two opposite ones as long as the cup, the other four as long as the claws of the blossom. *Anthers* (oblong. E.)

PIST. *Germen* (cylindrical, tapering. E.) *Style* (awl-shaped. E.) *Summit* a knob, entire.

S. VESS. *Pod* oblong, (imperfectly cylindrical, but pointed, with protuberances as if jointed, coriaceous, not bursting. E.)

SEEDS (pendulous, globose, forming a single row ; cotyledons folded, incumbent, their doubled edges meeting the radicle. E.)

Obs. (Pods internally spongy ; so variable as to their jointed appearance, as not to support the distinction by which Tournefort and Gartner would characterize their genus *Raphanistrum.* E.)

CLASS XVI.

MONADELPHIA.

In this Class the filaments are all united at the base, but separate at the top. The ORDERS are determined by the number of stamens. The flowers admit of the following

NATURAL CHARACTER.

- CAL.** *Cup* always present, permanent, in many instances double.
BLOSS. *Petals* five, inversely heart-shaped, the edge of one lying over the edge of the next, from the right to the left.
STAM. *Filaments* united at the base, separate at the top; the outer ones the shorter. *Anthers* fixed sidewise.
PIST. *Receptacle of the fruit* projecting in the centre of the flower. *Germens* upright, surrounding the top of the receptacle in a jointed circle. *Styles* united at the base into one body with the receptacle, but separated at the top into as many parts as there are germens. *Summits* expanding, slender.
S. VESS. *Capsules* divided into as many cells as there are styles: of various figures in different genera; and often composed of the same number of seed-coats united.
SEEDS kidney-shaped.

Obs. The plants of this natural Class, (containing, among others, the beautiful tribe of *Geraniaceæ*, E.) were considered by Tournefort as having only one petal. But all the petals are distinct at the base, though by the intervention of the united filaments, they cohere as one body; on which account they may more properly be considered as having five petals. The fruit does not afford sufficient marks whereby to distinguish the genera in this Class; but the *calyx* is of the utmost importance, and furnishes invariable characters. Linn. The petals are truly a continuation of the cylindrical sheath, formed by the united filaments, which incloses the styles and germens as it descends: when rising upwards it spreads out into petals.

MONADELPHIA. (Filaments united.)

TRIANDRIA. (Three Stamens.)

Juniperus.

PENTANDRIA. (Five Stamens.)

Erodium.

DECANDRIA. (Ten Stamens.)

Geranium.

POLYANDRIA. (Many Stamens.)

Althæa.

Malva.

Lavatera.

Tarax.

Pinis.

TRIANDRIA.

JUNIP'ERUS. (JUNIPER. E.) *Tourn.* 361. *Gærtn.* 91.*Male flowers.*

CAL. *Calkin* conical, consisting of a common spike-stalk, in which three opposite flowers are placed in a triple row, and a tenth flower at the end. At the base of each flower is a

Scale; broad, short, fixed sidewise to a little pillar like a foot-stalk.

BLOSS. none.

STAM. *Filaments* (in the *terminating* flower) three, awl-shaped, united at the bottom into one body; in the *lateral* flowers hardly perceptible.

Anthers three, distinct in the *terminating* flowers; but in the *lateral* flowers fixed to the scale of the calyx.

Female flowers.

CAL. *Cup* with three divisions, very small, growing to the germen, permanent.

BLOSS. *Petals* three, rigid, acute, permanent.

PIST. *Germen* beneath. *Style* three, simple. *Summits* simple.

S. VESS. *Berry* fleshy, roundish, marked on the lower part with three opposite tubercles, vestiges of the cup, and marked at the top by three little teeth which were originally the petals.

SEEDS three, bony, convex on one side, angular on the other, oblong.

PENTANDRIA.

(ERO'DIUM. STORK'S-BILL. E.) *L'Herit.* Geranio: unpublished. *Ait. Hort. Kew.* *De Cand.* Geranium. *Linn.*

CAL. inferior, of five ovate, glandular-pointed, concave, permanent leaves, equal and uniform at the base.

BLOSS. *Petals* five, obovate, spreading, rather longer than the calyx, generally somewhat irregular.

Nectariferous Glands five, alternate with the petals.

STAM. *Filaments* ten, awl-shaped, united at their base into a cup; five of them perfect, nearly as long as the petals; the alternate five shorter and abortive. *Anthers* five, on the longer filaments only oblong, versatile.

PIST. *Germen* superior, roundish, with five furrows. *Style* awl-shaped, erect, longer than the stamens, permanent. *Summits* five, oblong, reflexed.

S. VES. *Capsule* five, aggregate, membranous, obovate, vertical, separating at their inner margin, sharp-pointed at the base, each tipped at the summit with a long, linear, flat, upright, pointed, converging, rigid awn, hairy at the inside, and at length spirally twisted, adhering by its point to the top of the style; the hairs spreading.

SEEDS one or two, vertical, ovate-oblong. *Sm. Eng. Fl. E.*

DECANDRIA.

GERA'NIUM. (CRANE'S-BILL. E.) *Tourn.* 142. *Gærtn.* 79.
(Sm. E.)

CAL. *Cup* five leaves; *leaflets* egg-shaped, (glandular-pointed, E.)
concave, permanent.

BLOSS. *Petals* five, inversely heart-shaped, expanding, large, regular.
Nectariferous Glands five, alternate with the petals. E.)

STAM. *Filaments* ten, awl-shaped, united at their base, so as to form a
sort of cup, expanding towards the top, alternately longer and shorter,
shorter than the blossom. *Anthems* oblong, turning about like a vane.

PIST. *Germen* with five angles, beaked. *Style* awl-shaped, erect,
longer than the stamens, permanent. *Summits* five, oblong, re-
flexed.

S. VESS. *Capsules* five, (aggregate, membranous, nearly globular, sepa-
rating at their inner margin, beaked, each terminated by a long, naked,
simple awn, neither spiral nor bearded. E.)

SEEDS solitary, roundish, kidney-shaped.

OBS. (L'Heritier has divided this genus into three, viz. *Geranium*, *Pelargonium*, and *Erodium*. The first includes those species which are furnished with ten perfect stamens; the second, those which have seven; and the third those which have five only. The British Flora does not afford any example of *Pelargonium*; but the other part of the arrangement we have adopted. E.)

POLYANDRIA.

ALTHÆA. (MARSH-MALLOW. E.) *Tourn.* 23 and 24,
Malva. *Gærtn.* 136.

CAL. *Cup* double.

Outer Cup of one leaf, small and permanent, with six to nine clefts.
Segments very narrow.

Inner Cup of one leaf, with five shallow clefts. *Segments* broader,
more acute, permanent.

BLOSS. *Petals* five, united at the base to the tube formed by the union
of the filaments, inversely heart-shaped, bitten, flat.

STAM. *Filaments* numerous, united at the base into a cylinder, sepa-
rate at the top, and on the surface of the tube. *Anthems* nearly
kidney-shaped.

PIST. *Germen* round and flat. *Style* cylindrical, short. *Summits*
about twenty, bristle-shaped, as long as the styles.

S. VESS. *Capsules* as many as there were styles, two-valved, disposed
circularly around the columnar receptacle; each of two valves and
one cell, finally deciduous. E.)

SEEDS solitary, kidney-shaped, compressed.

MAL'VA. (MALLOW. E.) *Gærtn.* 136.

CAL. *Cup* double.

Outer Cup three leaves, narrower; *leaflets* heart-shaped, acute, permanent. *Inner cup* one leaf, with five shallow clefts, larger, broader, permanent.

BLOSS. *Petals* five, inversely heart-shaped, bitten, flat, united at the base to the tube of the stamen.

STAM. *Filaments* numerous, united at their base into a cylinder, separate at the top, and on the surface of the tube. *Anthers* kidney-shaped.

PIST. *Germen* round and flat. *Style* cylindrical, short. *Summits* numerous, bristle-shaped, as long as the styles.

S. VESS. (*Capsules* as many as the styles, two-valved, disposed circularly around the columnar *receptacle*; at length deciduous. E.)

SEEDS solitary, rarely two or three, kidney-shaped.

OBS. All the species of this, as well as of the genera *Althæa* and *Lavatera*, are mucilaginous and emollient. The farina is a pretty microscopic object, appearing toothed like the wheel of a watch. Linn. It is globular and covered with prickles, which give it the toothed appearance.

LAVATE'RA. (TREE-MALLOW. E.) *Gærtn.* 136.

CAL. *Cup* double.

Outer cup one leaf, with three clefts, blunt, shorter, permanent.

Inner cup one leaf, with five shallow clefts. *Segments* more acute, upright, permanent.

BLOSS. *Petals* five, united at the base to the tube of the stamens, inversely heart-shaped, flat, expanding.

STAM. *Filaments* numerous, united at their base into a cylinder, separate at the top, and on the surface of the tube. *Anthers* kidney-shaped.

PIST. *Germen* round and flat. *Style* cylindrical, (with a conical permanent base. E.) *Summits* seven to fourteen, bristle-shaped, as long as the style.

S. VESS. (*Capsules* as many as the summits, compressed, either tumid, or concave and wrinkled, at the back, ranged in a whirl around the columnar *receptacle*; at length deciduous. E.)

SEEDS solitary, kidney-shaped.

TAXUS. (YEW-TREE. E.) *Tourn.* 362. *Gærtn.* 91.

Male flowers.

CAL. none, except the *Bud*, which resembles a cup with four leaves.

BLOSS. none.

STAM. *Filaments* numerous, united below into a column longer than the bud. *Anthers* depressed, blunt at the edge, with eight clefts, opening all round at the base; after shedding their pollen, flat, target-shaped, and the clefts in the edge become more remarkable.

Female flowers on another plant.

CAL. as above.

BLOSS. none.

PIST. *Germen* egg-shaped, but tapering to a point. *Style* none. *Summit* blunt.

S. VESS. *Berry* an expansion of the receptacle, succulent and globular, open, coloured. In course of time it becomes dry, decays, and disappears.

SEEDS single, egg-oblong, the top standing out of the open end of the berry.

Obs. This species of berry is very singular, and strictly speaking, ought not to be called a seed-vessel. Linn. (The "Fleshy Drupe" of some authors, "Pulpy Calyx" of others. E.)

PI'NUS. (PINE. FIR. E.) *Tourn.* 356. *Gærtn.* 91.

Male flowers (in crowded racemose catkins, with scales peltate. E.)

CAL. none, but the opening scales of the bud.

BLOSS. none.

STAM. *Filaments* many, united below into an upright pillar, divided at the top. *Anthers* upright, naked.

Female flowers on the same plant.

CAL. *Cone* somewhat egg-shaped, composed of

Scales, with two flowers in each, oblong, tiled, permanent, inflexible.

BLOSS. none.

PIST. *Germen* very small. *Style* awl-shaped. *Summit* simple.

S. VESS. none. The *Scales* of the cone, which before stood open, closing upon the seed.

SEED. *Nut* enlarged by a membranous wing, larger than the seed, but smaller than the scales of the cone, oblong, on one side straight, rounded on the other.

CLASS XVII.

DIADELPHIA.

THIS Class comprehends the *Butterfly-shaped* flowers, (*Papilionaceæ*, Linnaeus, E.) and the *leguminous* plants (*Leguminosæ*, Jussieu, E.) of some authors. Linnaeus takes the Classic character from the *disposition*, and the character of the Orders from the *number* of stamens. From the title of this Class, the young Botanist will be led to imagine, that the filaments are always formed into *two sets*, but this is by no means the case; in many instances they are united into *one set*. The

butterfly-shape of the blossom will, therefore, be a surer guide. If the student will gather the flower of a garden pea, and compare it with the following Natural Character, no difficulty will remain in pronouncing, at first sight, whether a plant belong to this Class or not.

NATURAL CHARACTER.

CAL. *Cup* one leaf, bell-shaped, shrivelling, protuberant at the base, the lower part connected with the fruit-stalk, upper part blunt, containing honey. *Rim* with five teeth, acute, upright, oblique, unequal. The *lowermost* tooth longer; two *upper teeth* shorter, and standing further asunder. The bottom of the cup inclosing the receptacle, moistened with a liquor like honey.

BLOSS. *butterfly-shaped*, unequal, each petal having a distinct name. Thus the

Standard, is the largest petal, lying upon, and covering the others. It is flat, horizontal, fixed by a claw to the upper edge of the receptacle; that part of it which stands out of the cup nearly circular and entire; a rising line, marking it lengthwise, particularly towards the end, as if it had been pressed down at the sides. That part of the petal next the base is somewhat like half a cylinder, and it incloses the parts which lie under it. The border is depressed on each side, but the sides next to the edge are turned upwards, where the half cylinder terminates. At the commencement of the border there are two concave impressions, prominent on the under side, and compressing the wings which lie beneath them. The

Wings are two equal petals; one placed on each side of the flower under the standard. The borders incumbent, parallel, rounded, and oblong, broadest outwards, the upper edge nearly straight, the lower extended and rounded. The base of each wing is cloven, the *lower segment* extending into a claw, fixed to the side of the receptacle, and about as long as the cup; the *upper segment* shorter, and bent inwards. The

Keel is the lowermost petal, generally deeply divided, placed under the standard, and between the wings. It is boat-shaped, concave, compressed at the sides, placed in the position of a boat upon the water. It is mutilated at the base, the lower part extending into a claw as long as the cup, and fixed to the receptacle. The upper and lateral segments shorter, and enfolded with those parts of the wings which resemble them in shape. The sides of the keel are shaped like the wings, and have a similar situation, only lower and more inwards. The line that forms the keel, in this petal, is straight as far as the middle, and then gradually rises in an arch; but the marginal line runs straight to the extremity, until it meets with, and is lost in that of the keel.

STAM. *Filaments* united into two sets, differing in shape. The *lower filament* inclosing the pistil; the *upper filament* lying upon it.

Lower filament inclosing, sheathing the germen, membranous below the middle, and cylindrical, opening upwards and lengthwise, termi-

nating in nine awl-shaped filaments, bent like the keel, and equal to it in length, alternately two longer and two shorter.

Upper filament awl or bristle-shaped; similar in situation to, and lying upon the opening of the cylindrical part of the lower filament, simple, and a little shorter than that: separated from the others at the base, so as to give a vent on each side for the honey.

Anthers ten, one upon the upper filament, nine upon the lower, small, equal in size, terminating.

PIST. single, superior.

Germen oblong, nearly cylindrical, slightly compressed, straight, as long as the cylinder of the lower filament, which incloses it.

Style awl-shaped, or thread-shaped, ascending, agreeing in length and situation with the divisions of the lower filament, and placed in the middle of them, shrivelling.

Stamens downy as far as it is turned upwards, placed directly under the anthers.

S. VESS. *Legumen* oblong, compressed, blunt, with two valves, and a seam running lengthwise both above and below; both seams straight, but the upper seam falling near the base, and the lower seam rising towards the end. It opens at the upper seam.

SEEDS several, roundish, smooth, fleshy, pendent, marked with a prominence caused by the young plant near the insertion of the eye. When the young plant is excluded, the side lobes retain the figure of half the seed.

Receptacles proper to the seeds; small, very short, slender at the base, blunt and oblong at the part by which they are fixed. Inserted lengthwise in the upper seam only of the pod, but alternately, so that the valves being separated, the seeds adhere alternately to each valve.

OBS. This Class is perfectly natural, and the structure of the flowers extremely singular: their situation is generally obliquely pendent.

The figure of the Legumen is not of so much consequence in ascertaining the genera as some have imagined; but the Cup, which has been hitherto thought unworthy of notice, is of the greatest use. The Leaves should never be considered in forming the characters of genera.

The Seeds of this Class furnish food for men, and other animals: they are farinaceous and flatulent. The leaves are food for cattle. None of them are poisonous.

Dr. Pulteney, in a note added to his translation of the *Pan Succicus*, says, "A general view of this Class shows at once how very acceptable its plants are to almost all cattle; cows and sheep refuse none, and horses not more than three out of the whole number with which they were tried. They afford the richest food for cattle, and are cultivated in divers parts of Europe, with all possible attention. With us, *Trifolium pratense*, (Clover) is mostly sown. Lately some trials have been made with *Hedysarum Onobrychis*, (Saintfoin) and some have thought that it answers better than Clover. I say nothing of the exotic *Lucerne*. Among these plants *Anthyllis vulneraria* is particularly acceptable to sheep; inasmuch, that the separate cultivation of it has been recommended, but it will not succeed well except on chalky grounds." (See Dr. Pulteney's accurate and judicious work, entitled, "A General View of the Life and Writings of Linnaeus.")

DIADELPHIA. (Filaments in two sets.)

Fumaria. HEXANDRIA. (Six Stamens.)

Polygala. OCTANDRIA. (Eight Stamens.)

Spartium. DECANDRIA. (Ten Stamens.)

<i>Spartium.</i>	<i>Orobanch.</i>	<i>Hedysarum.</i>
<i>Genista.</i>	<i>Lathyrus.</i>	<i>Astragalus.</i>
<i>Ulex.</i>	<i>Vicia.</i>	<i>Trifolium.</i>
<i>Ononis.</i>	<i>Ervum.</i>	<i>Lotus.</i>
<i>Anthyllis.</i>	<i>Ornithopus.</i>	<i>Medicago.</i>
<i>Pisum.</i>	<i>Hippocrepis.</i>	

HEXANDRIA

FUMARIA. (FUMITORY. E.) *Tourn.* 237. *Gærtn.* 115.

CAL. Cup two leaves; leaflets opposite, equal, lateral, upright, acute, small, deciduous.

BLOSS. oblong, tubular, gaping, palate prominent and closing the mouth.

Upper lip flat, blunt, notched, reflexed. (*The Standard.*)

The Nectary is the base of the upper lip projecting backwards, blunt.

Lower lip altogether similar to the upper lip, towards the base keeled. (*The Keel.*)

Nectary at the base keeled, but projecting less than in the other.

Mouth four-cornered, blunt, cloven perpendicularly. (*The Wings.*)

STAM. Filaments two, equal, broad, tapering, one inclosed within each lip. Anthers three, at the end of each filament.

PIST. Germen oblong, compressed, pointed. Style short. Summit compressed, (two-lobed. E.)

S. VESS. Pouch with one cell.

SEEDS roundish, somewhat beaked. E.)

Obs. The stamens are almost the only invariable part in this genus. *F. officinalis* has a roundish pouch, generally containing a single seed, deciduous. Linn. In *F. claviculata* the seed-vessel is an oblong, taper-pointed pod.

OCTANDRIA.

POLYG'ALA. (MILKWORT. E.) *Tourn.* 79. *Cartn.* 62.
(Sm. E.)

CAL. *Cup* five leaves, small, imbricated in the bud, E.) *leaflets* egg-shaped, acute, permanent, two placed beneath, and one above the blossom, the two *middle* leaflets nearly egg-shaped, flat, large, coloured, (the *Wings*) deciduous.

BLOSS. nearly butterfly-shaped.

Standard generally cylindrical, tubular, short. *Rim* reflexed, small, cloven.

Keel concave, compressed, gibbous towards the end.

Appendages to the keel, generally, two pencil-shaped substances, with three divisions, fixed towards the end of the keel.

STAM. *Filaments* eight, (united at their base, divided above into sets of four each; E.) inclosed in the keel. *Anthers* eight, (tubular, each of one cell, opening at the summit. E.)

PIST. *Germen* oblong. *Style* simple, upright. *Summit* terminating, rather thick, cloven.

S. VESS. *Capsule* inversely heart-shaped, compressed, acute at the edge; *cells* two. *Valves* two. *Partition* placed crosswise to the valves, opening at the edge on each side.

SEEDS solitary, egg-shaped, (downy, crested. E.)

OBS. The appendages to the keel vary in different species, and in many they are not to be found. Linn.

DECANDRIA.

SPARTIUM. (BROOM. E.) *Tourn.* 411. *Genista.* *Cartn.* 153. (Sm. E.)

CAL. *Cup* one leaf, heart-shaped, but tubular, small, coloured, the upper margin very short, the lower towards the end set with five little teeth.

BLOSS. butterfly-shaped. *Petals* five.

Standard inversely heart-shaped, entirely reflexed, very large.

Wings egg-shaped, oblong, shorter than the standard, connected in the filaments.

Keel, petals two, spear-shaped, oblong, longer than the wings, connected at the keel-shaped margin by soft hairs, attached to the filaments.

STAM. *Filaments* ten, (united into one tube, E.) unequal, adhering to the germen, the uppermost very short, and from that growing gradually longer; the lower cloven into nine parts. *Anthers* oblong, (vane-like. E.)

PIST. *Germen* oblong, hairy. *Style* awl-shaped, curved upwards. *Summit* fixed to the upper side of the end of the style, hairy.

S. VESS. *Legumen* (compressed, subtended by the permanent calyx, and tipped with the twisted style, which is at length deciduous. E.) long, blunt, with one cell and two valves.

SEEDS (several, roundish, but somewhat kidney-shaped, beaked.

OBS. The most able Botanists differ in opinion as to the correct arrangement of this and the following genus, or whether their respective characters can be supported. E.)

GENISTA. (GREEN-WEED. E.) *Tourn.* 412, *Spartium.* *Gærtn.* 151. (Sm. E.)

CAL. *Cup* one leaf, small, tubular, two-lipped. *Upper lip* with two teeth, more deeply divided than the *lower lip*, which has three teeth nearly equal.

BLOSS. butterfly-shaped.

Standard oblong, distant from the keel, entirely bent back.

Wings oblong, flexible, shorter than the other petals.

Keel straight, notched at the end, longer than the standard.

STAM. *Filaments* ten, connected, rising out of the keel. *Anthers* simple.

PIST. *Germen* oblong, (compressed. E.) *Style* simple, rising upwards. (deciduous. E.) *Summit* acute, rolled inwards.

S. VESS. *Legumen* roundish, turgid, with one cell and two valves, (subtended by the permanent calyx, and tipped with the permanent curved base of the style. E.)

SEEDS (several, roundish, or quadrangular. E.)

OBS. *G. pilosa* has two or more seeds; *G. anglica* from three to fourteen; and *G. tinctoria* many.

GEN. (PURSE. GORSE. E.) *Tourn.* 412. *Gærtn.* 51.

CAL. *Cup* (tubular, E.) two-leaved, permanent; *leaflets* egg-oblong, concave, straight, equal, (coloured, E.) a little shorter than the keel, the upper with two teeth, the lower with three.

BLOSS. butterfly-shaped, of five petals.

Standard inversely heart-shaped, cloven, upright, very large.

Wings oblong, blunt, shorter than the standard.

Keel of two petals, straight, blunt, approaching at the lower edge.

STAM. *Filaments* ten, (united at the base, in two sets, one simple, and one in nine awl-shaped segments. E.) *Anthers* (of two lobes. E.)

PIST. *Germen* oblong, cylindrical, hairy. *Style* thread-shaped, curved upwards. *Summit* blunt, very small.

S. VESS. *Legumen* oblong, turgid, little longer than the cup, straight, with one cell and two valves.

SEEDS (about eight, polished, having a tumid, cloven, beak. E.)

ONO'NIS: (REST-HARROW. E.) *Tourn.* 229, *Anonis.* *Gærtn.* 154.

CAL. *Cup* with five divisions, nearly as long as the blossom. *Segments* strap-shaped, tapering to a point, a little curved upwards, the lowest under the keel.

BLOSS. butterfly-shaped.

Standard heart-shaped, striated, the sides depressed more than in the rest.

Wings egg-shaped, half as long as the standard.

Keel (of two converging petals, E.) tapering to a point, generally longer than the wings.

STAM. *Filaments* ten, united into one cylinder. *Anthers* roundish.

PIST. *Germen* oblong, woolly. *Style* simple, rising upwards. *Summit* blunt.

S. VESS. *Legumen* diamond-shaped, turgid, rather woolly, with one cell and two valves, sessile.

SEEDS few, kidney-shaped, (scabrous, with minute dots. E.)

ANTHYLLIS. (KIDNEY-VETCH. E.) *Tourn.* 211, *Vulneraria.* *Gærtn.* 145.

CAL. *Cup* (tubular, E.) one leaf, egg-oblong, ventricose, pubescent; rim with five unequal teeth, permanent.

BLOSS. butterfly-shaped.

Standard longer, with reflexed sides, and a claw as long as the cup.

Wings two, oblong, shorter than the standard.

Keel compressed, as long as the wings, and like them.

STAM. *Filaments* ten, (united into one cylinder, finally splitting along the upper edge, their separate extremities curved upwards. E.) *Anthers* simple.

PIST. *Germen* oblong. *Style* (awl-shaped, ascending. *Summit* blunt.

S. VESS. *Legumen* roundish, inclosed in the (inflated calyx, E.) very small, with two valves.

SEEDS one or two, smooth.

Obs. The singular structure of the filament in *A. vulneraria* merits attention. The top of each filament is distended like a hollow bladder, in form of an inverted pyramid, and the anther is fixed in the centre of the base of the pyramid. This hollow vesicle probably answers the purpose of a nectary.

PISUM. (PEA. E.) *Tourn.* 215. *Gærtn.* 152.

CAL. *Cup* one leaf, with five clefts, acute, permanent, the two upper segments the shortest.

BLOSS. butterfly-shaped.

Standard very broad, inversely heart-shaped, reflexed, notched, with (a pair of protuberances at the inner side near the bottom. E.)

Wings two, circular, approaching, shorter than the standard.

Keel compressed, half-moon-shaped, shorter than the wings.

STAM. *Filaments* ten, one simple, superior, awl-shaped, but flat; nine awl-shaped, united from the middle downwards into a cylinder, which is cloven towards the top. *Anthers* roundish.

PIST. *Germen* oblong, compressed. *Style* ascending, triangular, mem-

branous, keeled, the sides bent outwards. *Summit* attached to the upper edge of the style, E.) oblong, downy.

S. VESS. *Legumen* large, oblong, tumid, compressed, the point tapering upwards, one cell, two valves. E.)

SEEDS several, globular.

(Obs. The style being sharp-edged or keeled above, not flat, distinguishes this genus from *Lathyrus*. E.)

OR'OBUS. BITTER-VETCH. E.) *Tourn.* 214, *Gærtn.* 151.

CAL. *Cup* one leaf, tubular, blunt at the base; *rim* oblique, very short, with five teeth, the three lower the sharpest, the two upper shorter, deeper, and more bluntly divided, shrivelling.

BLOSS. butterfly-shaped.

Standard inversely heart-shaped, longer, reflexed at the end and at the sides.

Wings two, oblong, nearly as long as the standard, rising upwards, approaching.

Keel cloven in the lower part, tapering to a point rising upwards, edges approaching, parallel, compressed, (protuberant at the base. E.)

STAM. *Filaments* ten, ascending, nine (united into a compressed tube. E.) *Anthers* roundish.

PIST. *Germen* oblong, compressed. *Style* thread-shaped, bent upwards, (channelled above. E.) *Summit* strap-shaped, on the inner side downy from the middle to the end of the style.

S. VESS. *Legumen* (oblong, tumid, tapering to an ascending point, with one cell, and two twisting valves. E.)

SEEDS several, roundish.

LATH'YRUS. VETCHLING. EVERLASTING-PEA. E.) *Tourn.* 216, 217, and 223. *Aphaca.* *Gærtn.* 152.

CAL. *Cup* one leaf, bell-shaped, with five shallow clefts. *Segments* spear-shaped, acute, the two upper shortest, the lower one longer.

BLOSS. butterfly-shaped.

Standard inversely heart-shaped, very large, reflexed at the end and at the sides.

Wings oblong, crescent-shaped, short, blunt.

Keel half a circle, as large as the wings, but broader, (of two combined petals, rather tumid, E.) opening inwardly at the middle.

STAM. *Filaments* ten, rising upwards, nine united into a tube. *Anthers* roundish.

PIST. *Germen* compressed, linear-oblong. *Style* upright, flat, bordered towards the top, acute at the end. *Summit* extending from the middle of the style to the end, downy along the fore part.

S. VESS. *Legumen* long, cylindrical, or compressed, tapering to a point. *Valves* two. *Cell* one.

SEEDS many, cylindrical or globular, somewhat angular.

Obs. This genus is nearly allied to *Pisum*, but its style is evidently different.

VICIA. (VETCH. E.) *Tourn.* 212. *Gärtn.* 151.

CAL. *Cup* one leaf, tubular, upright, with five shallow clefts, acute, the upper teeth shortest, approaching, all equal in breadth.

BLOSS. butterfly-shaped.

Standard oval, with a broad oblong claw, notched at the end, with a sharp point in the middle, reflexed at the sides, compressed, the back somewhat keeled.

Wings two, oblong, upright, in the shape of half a heart, with an oblong claw, shorter than the standard.

Keel with an oblong cloven claw, in the shape of half a circle, compressed, shorter than the wings.

STAM. *Filaments* ten, nine united into a tube. *Anthers* upright, roundish, four-furrowed.

Nectary Gland short, pointed, arising from the receptacle, and situated between the united filaments and the germen.

PIST. *Germen* strap-shaped, compressed, long. *Style* thread-shaped, shorter, bent upwards, at a right angle. *Summit* blunt, (bearded beneath only. E.)

S. VESS. *Legumen* long, with two coriaceous valves, and one cell, terminated by a point.

SEEDS many, roundish, (or angular. E.)

ERVUM. (TARE, E.) *Tourn.* 221. *Gärtn.* 151.

CAL. *Cup* (tubular, E.) with five divisions, as long as the blossom. *Segments* tapering to a point, nearly equal.

BLOSS. butterfly-shaped.

Standard flat, a little reflexed, circular, large.

Wings blunt, half as long as the standard.

Keel shorter than the wings, tapering to a point.

STAM. *Filaments* ten, rising upwards, nine united into a compressed tube. *Anthers* (small, roundish. E.)

PIST. *Germen* oblong, (compressed. E.) *Style* simple, rising upwards, at a right angle. *Summit* blunt, (all over hairy. E.)

S. VESS. *Legumen* oblong, blunt, cylindrical, with protuberances formed by the seeds.

SEEDS (generally two or four, nearly roundish, rather flattened.

(**Obs.** The generic distinction of *Vicia* and *Ervum* rests chiefly on a difference in the stigma: that of the former being bearded with a tuft of hairs beneath only; of the latter pubescent all over. E.)

ORNITHOPUS. (BIRD'S-FOOT. E.) *Tourn.* 224, *Ornithopodium.* *Gärtn.* 155.

CAL. *Cup* one leaf, tubular, *rim* with five teeth, nearly equal, permanent.

BLOSS. butterfly-shaped.

Standard inversely heart-shaped, (ascending, E.) entire.

Wings egg-shaped, straight, hardly as long as the standard.

Keel compressed, very small.

STAM. *Filaments* ten, (nine united in a tube ; all curved upwards. E.)
Anthers simple, small.

PIST. *Germen* strap-shaped, (compressed. E.) *Style* bristle-shaped, ascending. *Summit* a mere point at the end of the style.

S. VESS. *Legumen* awl-shaped, cylindrical, curved, jointed, having transverse partitions, separating at the joints.

SEEDS solitary, roundish.

Obs. (Inflorescence capitate or umbellate. E.)

HIPPOCREPIS. HORSE-SHOE-VETCH. E.) *Tourn.* 225,
Ferrum equinum.

CAL. *Cup* one leaf, (bell-shaped, E.) with five teeth, the two upper conjoint and less deeply divided, permanent.

BLOSS. butterfly-shaped.

Standard heart-shaped, with a vaulted claw as long as the cup.

Wings egg-oblong, blunt.

Keel crescent-shaped, compressed.

STAM. *Filaments* ten, nine united into a tube, ascending. *Anthers* simple.

PIST. *Germen* slender, oblong, terminating in an awl-shaped style, ascending. *Summit* undivided, (quite smooth. E.)

S. VESS. *Legumen* compressed, membranous, long, incurved, deeply indented along one seam into roundish hollows, so that it appears as if composed of many three-edged blunt joints, connected together by the upper seam.

SEEDS oblong, curved, one in each joint.

Obs. The Essential Character consists in the legumen being shaped like a horse-shoe. Linn. (Inflorescence for the most part umbellate. E.)

HEDYSARUM. (SAINT-FOIN. E.) *Tourn.* 225 and 211.
Onobrychis. *Gærtn.* 155.

CAL. *Cup* one leaf, (tubular, E.) with five shallow clefts. *Segments* awl-shaped, upright, permanent.

BLOSS. butterfly-shaped, striated.

Standard reflexed and compressed, egg-oblong, notched at the end, long.

Wings oblong, narrower than the other petals, straight.

Keel straight, compressed, broader at the outer part, and transversely blunt, cloven from the base to the gibbous part.

STAM. *Filaments* ten, nine united into a tube, bent upwards at a right angle. *Anthers* roundish, compressed.

PIST. *Germen* compressed, strap-shaped. *Style* awl-shaped, curved like the stamens. *Summit* undivided.

S. VESS. *Legumen* with roundish joints, compressed, with two valves and one seed in each joint.
SEED kidney-shaped.

Obs. *H. onobrychis* has a legumen of only one joint and a single seed. Binn.
(The seed-vessels vary considerably in this genus. E.)

ASTRAGALUS. (MILK-VETCH. E.) *Tourn.* 233. *Gærtn.* 154.

CAL. *Cup* one leaf, tubular, with five acute teeth, the lower teeth gradually smaller.

BLOSS. butterfly-shaped.

Standard longer than the other petals, reflexed at the sides, notched at the end, blunt, straight.

Wings oblong, shorter than the standard.

Keel as long as the wings, notched at the end.

STAM. *Filaments* ten, almost straight, nine united into a tube. *Anthers* roundish.

PIST. *Germen* nearly cylindrical. *Style* awl-shaped, ascending. *Summit* blunt.

S. VESS. *Legumen* with two cells, the cells inclining to one side.

SEEDS (one or more, E.) kidney-shaped.

Obs. The legumen variously shaped in different species.

TRIFOLIUM. (TREFOIL. CLOVER. MELILOT. E.) *Tourn.* 228 and 229, *Melilotus.* *Gærtn.* 153.

CAL. *Cup* one leaf, tubular, with five teeth, permanent.

BLOSS. butterfly-shaped, generally permanent, shrivelling.

Standard reflexed.

Wings shorter than the standard.

Keel shorter than the wings.

STAM. *Filaments* ten, nine united (into one split, compressed tube. E.)
Anthers simple.

PIST. *Germen* somewhat egg-shaped. *Style* awl-shaped, ascending.
Summit simple.

S. VESS. *Legumen* scarcely longer than the cup, with one valve, (and one cell, E.) not opening, deciduous.

SEEDS few, roundish.

Obs. It is, perhaps, more difficult to give a true and Essential Character to this genus, than to any other, notwithstanding the general habit, which is at once perceptible, and the properties of the plants which compose it show that it is a natural one; and those who have attempted to divide it, have not been able to fix any certain limits to their sub-divisions. Linn.
(Inflorescence more or less capitate; in *T. officinale* racemose. E.)

LOTUS. (BIRD'S-FOOT TREFOIL. E.) *Tourn.* 227. *Gært.* 153.

CAL. *Cup* one leaf, tubular, with five shallow clefts: *teeth* acute, equal, upright, permanent.

BLOSS. butterfly-shaped, (deciduous. E.)

Standard nearly circular, (turned back; E.) *claw* oblong, vaulted.

Wings nearly circular, shorter than the standard, broad, (cohering by their upper edge. E.)

Keel protuberant in the lower part, closed above, tapering to a point, ascending, short.

STAM. *Filaments* ten, ascending, (nine united in one horizontal, split tube, dilated at the ends. E.) *Anthers* small, simple.

PIST. *Germen* cylindrical, oblong. *Style* simple, ascending. *Summit* a mere point, incurved.

S. VESS. *Legumen* cylindrical, stiff and straight, full, longer than the cup, valves two, cells many.

SEEDS many, somewhat cylindrical.

(OBS. The cells of the legumen are liable to be rendered incomplete by an intervening whitish spongy substance. Inflorescence solitary or capitate. E.)

MEDICAGO. (MEDICK. • LUCERNE. E.) *Tourn.* 231. *Gært.* 155.

CAL. *Cup* one leaf, straight, (tubular. E.) with five shallow clefts, tapering to a point, equal.

BLOSS. butterfly-shaped, (deciduous. E.)

Standard egg-shaped, entire, bent inwards at the edge, entirely reflexed.

Wings egg-oblong, fixed to the appendage of the keel, approaching at the sides under the keel.

Keel oblong; cloven, blunt, bent downwards by the pistil, and finally expanding from the standard.

STAM. *Filaments* ten, united almost the whole length into a split tube. *Anthers* small.

PIST. *Germen* on a little fruit-stalk, oblong, incurved, compressed, inclosed by the filaments, bursting elastically from the keel, and pressing back the standard, terminating in a *style* which is short, awl-shaped, generally straight. *Summit* terminal, very small.

S. VESS. *Legumen* compressed, long, bent inwards.

SEEDS often numerous, kidney-shaped, or angular.

OBS. The legumen in some species is bent like a sickle, (falcate,) in others it is spiral like a snail-shell. Linn. (Inflorescence clustered or spicate. E.)

CLASS XVIII.

POLYADELPHIA.

THIS Class comprehends the plants whose flowers have stamens united by the filaments into three or more sets. The Orders depend upon the number of stamens. We have only a single genus belonging to this Class, in some species of which the filaments are so far separated, that unless they are examined quite down to the bottom, the young Botanist would be apt to search for them in the Classes Icosandria or Polyandria.

POLYANDRIA.

HYPERICUM. *Tourn.* 131 and 128. *Androsæmum.* *Gærtn.* 62.

CAL. *Cup* with five divisions. *Segments* somewhat egg-shaped, concave, permanent.

BLOSS. *Petals* five, oblong-egg-shaped, blunt, expanding, inclining from left to right.

STAM. *Filaments* numerous, hair-like, united at the base into three or five sets. *Anthers* small, (tremulous. E.)

PIST. *Germen* roundish. *Style* three, (sometimes one, two, or five,) simple, distant, as long as the stamens. *Stamens* simple.

S. VESS. *Capsule* roundish, with as many cells as there are styles.

SEEDS (numerous, slightly rough with obsolete tubercles. E.)

CLASS XIX.

SYNGENESIA.

THIS Class comprehends those flowers which Botanists have very generally agreed to call *Compound*, (constituting the natural tribe *Compositæ* of Linnæus. E.) The essential character of a *Compound Flower* consists in the *Anthers* being united, so as to form a cylinder, and a single Seed being placed upon the receptacle, under each floret. The *Dandelion* and the *Thistle* are compound flowers; that is, each of these flowers is composed or compounded of a number of small flowers, called Florets.

CHARACTER OF THE FLOWER.

A Compound Flower is composed of many *Florets*, sessile, upon a Common Receptacle, and inclosed by one Common Calyx. The Surface of the Receptacle is either concave, flat, convex, pyramidal, or globular. It is either

Naked, that is, marked only with little dots, as in Dandelion: or *Hairy*, covered with soft upright hairs as in Thistle; or *Chaffy*, beset with awl-shaped, narrow, compressed, upright, palcaceous substances, separating the florets, as in Chamomile or Yarrow.

The Common Calyx is a *Cup* which surrounds the florets and the common receptacle. (After the florets have blossomed it contracts for the protection of the seeds; but when they are ripe it expands, and becomes reflexed, thus facilitating their escape. E.) It is either

Simple, when formed with only a single row of scales or leaves, as in Goat's-beard;

Tiled, when the scales are numerous, the outer ones gradually growing shorter, and lying upon the inner ones, like the tiles upon a house, as in Artichoke;

Leafy, when a single row of equal and longer segments stands next to the florets, and another row of very small scales surrounds the base only of those segments as in Daisy.

The structure of the Florets which compose a Compound Flower, will be best understood by pulling to pieces the flower of a Thistle, of Dandelion, or, of the Sunflower, and comparing the florets with the following

NATURAL CHARACTER OF A FLORET.

CAL. none, but the crown of the seed sessile upon the top of the germen. Bloss. one petal. Tube very slender and long, sessile upon the germen. It is either

1. Tubular. Border bell-shaped, with five clefts. Segments reflexed and expanding, as in Thistle or Burdock.
2. Narrow. Border strap-shaped, flat, turned outwards, lopped at the end, which is either entire, or marked with three or five teeth, as in Dandelion or Endive.
3. None. Border wanting, and sometimes the petal is altogether deficient.

STAM. Filaments five, hair-like, very short, fixed to the neck of the little blossom. Anthers five, upright, strap-shaped, united at the sides so as to form a hollow cylinder, as long as the border of the blossom, and marked at the top with five teeth.

PIST. Germen oblong, situated beneath the little blossom upon the common receptacle. Style thread-shaped, upright, as long as the stamens, passing through the hollow cylinder formed by the anthers. Summit divided, the segments rolled back and expanding.

S. VESS. properly speaking, none; though in *Osteosperma* and *Strumphia*, foreign genera, a sort of coriaceous crust invests the seed.

SEED single, oblong, frequently quadrangular, generally narrower towards the base.

Crowned with Down, which either consists of many undivided hair-like spokes, placed in a circle, or of spokes branched or radiated. This down, again, is either supported upon a little pillar, or sessile, immediately upon the seed. Dandelion. Thistle.

_____ with a small *Cup*, which has generally five teeth, and is permanent.

_____ neither with a *Cup*, nor with down. Tansy.

Obs. In examining the minuter florets, the dissecting instruments and the Botanic Microscope will be found extremely useful.

The disposition of the stamens and pistils varying, occasions the following

DISTINCTIONS OF FLORETS.

Floret. Tubular, *Hermaphrodite*, containing both stamens and pistils.

_____ *Male*, containing stamens but no pistils.

_____ *Female*, containing a pistil but no stamens.

_____ *Neutral*, containing neither stamens nor pistil.

_____ Strap-shaped, *Hermaphrodite*, as above.

_____ *Male*, as above.

_____ *Female*, as above.

_____ *Neutral*, as above.

From considering these different structures of the florets, it is evident, that Compound Flowers may be composed either of

1. Florets *tubular* in the centre, with stamens and pistils. *Tubular* in the circumference, with stamens and pistils.
2. Florets *tubular* in the centre, with stamens and pistils. *Tubular* in the circumference with only pistils.
3. Florets *tubular* in the centre, with stamens and pistils. *Tubular* in the circumference, with neither stamens nor pistils.
4. Florets *tubular* in the centre, with stamens and pistils. *Narrow* in the circumference, with stamens and pistils.
5. Florets *tubular* in the centre, with stamens and pistils. *Narrow* in the circumference, with only pistils.
6. Florets *tubular* in the centre, with stamens and pistils. *Narrow* in the circumference, with neither stamens nor pistils.
7. Florets *tubular* in the centre, with stamens and pistils. *Pistils* in the circumference without blossoms.
8. Florets *tubular* in the centre, with stamens and imperfect pistils. *Pistils* in the circumference without blossoms.
9. Florets *narrow* in the centre, with stamens and pistils. *Narrow* in the circumference, with stamens and pistils.

The Orders, therefore, according to the system we have adopted, will be as follows:—

- I. *Polygamia equalis*; (florets all hermaphrodite.) That is, when all the florets are furnished with stamens and pistils. (9. 1. 4. of the preceding table.)

- II. *Polygamia superflua*. (Florets of the circumference remafe.) That is, when the florets in the centre have both stamens and pistils; but the florets in the circumference only pistils. (2. 5. 7. of the preceding table.)
- III. *Polygamia frustranea*. (Florets of the circumference neutral.) That is, when the florets in the centre have both stamens and pistils; but the florets in the circumference neither. (3. 6. of the preceding table.)
- IV. *Polygamia necessaria*. (Necessary female florets.) That is, when the florets in the centre have both stamens and pistils; but, from some defect in the pistils, produce no seed. The florets in the circumference have pistils only, and produce perfect seeds. (8 of the preceding table.)
- V. *Polygamia segregata*. (Separated florets.) That is, when several florets, each having its own proper cup, are inclosed within one common calyx, so as to form altogether but one flower.

The British Flora does not furnish any example of this Order.

The plants of this Class are supposed to have various specific virtues. Most of them are bitter; none of them poisonous, except, perhaps, *Lactuca virosa*, when growing in shady situations.

The elasticity of the calyx in *Picris*, *Carduus*, and other genera, is too remarkable to pass unnoticed by the slightest observer. It seems as if the expansion of the florets first burst the calyx open, and when these wither it again closes. The downy hairs that crown the seeds, before upright, now begin to expand, and, by this expansion, again open the leaves of the calyx, and bend them quite back. The seeds now escape, and the calyx, becoming dry and shrivelled, no longer retains its elastic power.

The hairy, or downy appendages of the seeds, occasion them to be wafted about in the air, and disseminated far and wide. The structure of this down deserves notice: scarcely a child is insensible to its beauty in *Leontodon*, or Dandelion.

SYNGENESIA. (United Anthers.)

POLYGAMIA ÆQUALIS. (Florets all Hermaphrodite.)

<i>Tragopogon.</i>	<i>Crepis.</i>	<i>Onopordon.</i>
<i>Picris.</i>	<i>Hypochaeris.</i>	<i>Carlina.</i>
<i>Sonchus.</i>	<i>Lapsana.</i>	<i>Bidens.</i>
<i>Lactuca.</i>	<i>Nichorium.</i>	<i>Eupatorium</i>
<i>Prenanthes.</i>	<i>Arctium.</i>	<i>Chrysocoma</i>
<i>Leontodon.</i>	<i>Serratula.</i>	<i>Santolina.</i>
<i>Hieracium.</i>	<i>Carduus.</i>	

POLYGAMIA SUPERFLUA. (Florets of the Circumference Female.)

<i>Tanacetum.</i>	<i>Senecio.</i>	<i>Bellis.</i>
<i>Artemisia.</i>	<i>Aster.</i>	<i>Chrysanthemum.</i>
<i>Gnaphalium.</i>	<i>Solidago.</i>	<i>Pyrethrum.</i>
<i>Conyza.</i>	<i>Cineraria.</i>	<i>Matricaria.</i>
<i>Frigeron.</i>	<i>Inula.</i>	<i>Anthemis.</i>
<i>Tussilago.</i>	<i>Doronicum.</i>	<i>Achillea.</i>

POLYGAMIA FRUSTRANEA. (Florets of the Circumference Neutral.)*Centaurea.***POLYGAMIA NECESSARIA.** (Necessary Female Florets.)*Calendula.***POLYGAMIA ÆQUALIS.****TRAGOPOGON.** (GOAT'S-BEARD. E.) *Tourn.* 270. *Gærtn.* 159.

CAL. *common*, simple, with eight leaves; *leaflets* spear-shaped, equal, every other standing more inwards, all united at the base.

BLOSS. *compound*, tiled, uniform. *Florets* hermaphrodite, numerous, the outer rather longer.

Individuals of one petal, strap-shaped, lopped, with five teeth.

STAM. *Filaments* five, hair-like, very short. *Anthems* forming a cylinder.

PIST. *Germs* oblong. *Style* thread-shaped, as long as the stamens.

Summits two, revolute.

S. VESS. none, the *calyx* closing, tapering to a point, as long as the seeds, protuberant at the base.

SEEDS solitary, oblong, tapering towards each end, angular, rough, terminated by a long awl-shaped pillar supporting the *down*, which is feathered and flat, with about thirty-two spokes.

RECEPT. naked, flat, (minutely cellular. E.)

OBS. In some species the seeds are straight, and the cup is longer than the blossoms; in others, the seeds crooked, and the cup shorter than the blossoms. (The down of the seeds, when ripe, assumes collectively a globular form. E.)

PICRIS. (OX-TONGUE. E.) *Gærtn.* 159.

CAL. *common*, double, the *outer* very large, with five leaves; *leaflets* heart-shaped, flat, flexible, converging; the *inner* tiled, egg-shaped.

BLOSS. *compound*, tiled, uniform. *Florets* hermaphrodite, numerous.

Individuals of one petal, narrow, strap-shaped, lopped, with five teeth.

STAM. *Filaments* five, hair-like, very short. *Anthems* forming a hollow cylinder.

PIST. *Germen* nearly egg-shaped. *Style* as long as the stamens. *Summits* two, reflexed.

S. VESS. none. The *calyx* unchanged, at length reflexed.

SEEDS solitary, swelling, blunt, wrinkled transversely. *Down* feathery, standing on a pedicle, (or sessile. E.)

RECEPT. naked, (dotted. E.)

SONCHUS. (SOW-THISTLE. E.) *Tourn.* 268. *Gærtn.* 158.

CAL. common, tiled, protuberant at the base. *Scales* many, strap-shaped, unequal.

BLOSS. compound, tiled, uniform. *Florets* hermaphrodite, numerous, equal.

Individuals of one petal, narrow, strap-shaped, lopped, with five teeth.

STAM. *Filaments* five, hair-like, very short. *Anthems* forming a hollow cylinder.

PIST. *Germen* somewhat egg-shaped. *Style* thread-shaped, as long as the stamens. *Summits* two, reflexed.

S. VESS. none, the *calyx* closing, assumes a globular form, compressed, but tapering to a point.

SEEDS solitary, rather long. *Down* hair-like, sessile.

RECEPT. naked, (dotted. E.)

LACTUCA. (LETTUCE. E.) *Tourn.* 267. *Gærtn.* 158.

CAL. common tiled, cylindrical, *scales* many, pointed, membranous at the edge.

BLOSS. compound tiled, uniform. *Florets* hermaphrodite, numerous, equal.

Individuals of one petal, strap-shaped, lopped, with four or five teeth.

STAM. *Filaments* five, hair-like, very short. *Anthems* forming a hollow cylinder.

PIST. *Germen* somewhat egg-shaped. *Style* thread-shaped, as long as the stamens. *Summits* two, reflexed.

S. VESS. none. *Calyx* closing, egg-shaped, cylindrical.

SEEDS solitary, egg-shaped, pointed, compressed. *Down* hair-like, (soft and fugacious, E.) on a long pedicle, tapering downwards.

RECEPT. naked, (dotted. E.)

OBS. *L. scariola* and *L. virosa* have furrowed seeds.

PRENANTHES. (WALL-LETTUCE. E.) *Gærtn.* 158.

CAL. common, double, cylindrical, smooth, *scales* of the cylinder equal in number to the florets; *scales* of the base few, unequal, very short.

BLOSS. compound, generally consisting of a single row of florets. *Florets* five to eight, or more, hermaphrodite, equal, standing in a circle.

Individuals of one petal, strap-shaped, lopped, with four teeth.

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STAM. *Filaments* five, hair-like, very short. *Anthers* forming a hollow cylinder.

PIST. *Germen* nearly egg-shaped. *Style* thread-shaped, longer than the stamens. *Summit* cloven, reflexed.

S. VESS. none. *Calyx* cylindrical, closing a little at the margin.

SEEDS solitary, (oblong, furrowed, bluntly angular. E.) *Down* hair-like, sessile.

RECEPT. naked, (narrow. E.)

OBS. In some species the down is supported on a pedicle. Linn.

LEONTODON. (DANDELION. *Apargia*. Schreb. Sm. Eng. Fl. E.) *Tourn.* 266.

CAL. common, tiled, oblong; (double. E.) *inner scales* strap-shaped, parallel, equal; *outer scales* fewer, those at the base generally reflexed.

BLOSS. compound, tiled, uniform. *Florets* hermaphrodite, numerous, equal.

Individuals of one petal, strap-shaped, narrow, lopped, with five teeth.

STAM. *Filaments* five, hair-like, short. *Anthers* forming a hollow cylinder.

PIST. *Germen* nearly egg-shaped. *Style* thread-shaped, as long as the florets. *Summits* two, revolute.

S. VESS. none. *Calyx* oblong, straight, at length reflexed.

SEEDS solitary, oblong, rough. *Down* hair-like, (radiating, supported on a long, cylindrical pedicle. E.)

RECEPT. naked, dotted, (convex. E.)

(**OBS.** However the genus *Apargia* may be sanctioned by modern authority, we feel an insuperable reluctance to dismember *Leontodon* by distinctions neither constant, nor facile of observation. The proposed characteristics will be found to exhibit, instead of positive contrast, almost every intermediate gradation. In *Leontodon* we have "calyx finally reflexed;" in *Apargia*, "calyx finally spreading;" or, according to Schreber, in the former, "calyx oblongus, rectus, tandem reflexus;" in the latter, "calyx oblongus, rectus." Neither is the down either invariably stipitate in *Leontodon*, nor sessile in *Apargia*. Describing the latter, Smith admits it to be "occasionally somewhat stipitate;" and Schreber has "pappus sessilis, (in centralibus sub-stipitatus,) plumosus." Nor in *Prenanthes*, *Crepis*, and other genera, has this consideration been found available; the down, in the latter especially, being "either on a stalk or sessile," Smith; so that the only remaining distinction is the down of the genuine *Leontodon* being capillary or hair-like, that of *Apargia* plumose or feathery; though the latter is described by Smith as "often scaly and unequal in the marginal seeds; occasionally somewhat stalked in the central ones, frequently accompanied by shorter hairs or plumes."

Aggregate down of the seeds forming a light globe, as in *Tragopogon*, soon dispersed by the wind. E.)

HIERACIUM. (HAWKWEED. E.) *Tourn.* 267. *Gärtn.* 158.

CAL. *common*, tiled, egg-shaped; *scales* numerous, strap-shaped, very unequal, lying lengthwise one over another.

BLOSS. *compound*, tiled, uniform. *Florets* hermaphrodite, numerous, equal.

Individuals of one petal, narrow, strap-shaped, lopped, with five teeth.

STAM. *Filaments* five, hair-like, very short. *Anthers* forming a hollow cylinder.

PIST. *Germen* egg-shaped. *Style* thread-shaped, as long as the stamens. *Summits* two, recurved.

S. VESS. none. *Calyx* converging, egg-shaped.

SEEDS solitary, (angular, not beaked. E.) *Down* hair-like, sessile.

RECEPT. naked, (dotted, sometimes slightly scaly. E.)

CREPIS. (HAWK'S-BEARD. E.) *Gärtn.* 158.

CAL. *common*, double.

Outer very short, open, deciduous.

Inner egg-shaped, simple, furrowed, permanent.

Scales strap-shaped, approaching.

BLOSS. *compound*, tiled, uniform. *Florets* hermaphrodite, numerous, equal.

Individuals of one petal, narrow, strap-shaped, lopped, with five teeth.

STAM. *Filaments* five, hair-like, very short. *Anthers* forming a hollow cylinder.

PIST. *Germen* nearly egg-shaped. *Style* thread-shaped, as long as the stamens. *Summits* two, reflexed.

S. VESS. none. *Calyx* roundish, (converging. E.)

SEEDS solitary, oblong. *Down* hair-like, on a pedicle,

RECEPT. (roughish. E.)

OBS. In *C. tectorum* and *C. biennis* the down is sessile. (This genus does not appear to be sufficiently distinct from *Hieracium*, even the little differences in character being far from invariable. E.)

HYPOCHÆRIS. (CAT'S-EAR. E.) *Gärtn.* 160.

CAL. *common*, roundish, tiled, protuberant at the base. *Scales* spear-shaped, acute.

BLOSS. *compound*, tiled, uniform. *Florets* hermaphrodite, equal, numerous.

Individuals of one petal, narrow, strap-shaped, lopped, with five teeth.

STAM. *Filaments* five, hair-like, very short. *Anthers* forming a hollow cylinder.

PIST. *Germen* egg-shaped. *Style* thread-shaped, as long as the stamens. *Summits* two, recurved.

S. VESS. none, the *calyx* becoming globular, but tapering, incloses the seeds.

SEEDS solitary, oblong, (furrowed, rough. E.) *Down* feathered, on a pedicle.

RECEPT. chaffy. *Chaff* spear-strap-shaped, as long as the seeds.

Obs. In *H. glabra* the central seeds have the down on a pedicle, but not those of the circumference. **Haller.**

LAP'SANA. (NIPPLE-WORT. SWINE'S SUCCORY. E.)
Tourn. 272. *Gærtn.* 157. (Sm. Hyoseris. *With.* to ed. 7. E.)

CAL. common, double, egg-shaped. *Scales of the tube* eight, equal, strap-shaped, with a hollow channel, keeled, acute. *Scales of the base* six, tiled, small, every other, smaller.

BLOSS. compound, tiled, uniform. *Florets* hermaphrodite, about sixteen, equal.

Individuals of one petal, strap-shaped, lopped, with five teeth.

STAM. *Filaments* five, hair-like, very short. *Anthers* forming a hollow cylinder.

PIST. *Germen* rather oblong, (small. E.) *Style* thread-shaped, as long as the stamens. *Summit* (spreading. E.)

S. VESS. none. *Calyx* egg-shaped, converging.

SEEDS solitary, oblong, cylindrical, but with three edges, (furrowed, smooth. E.) *Down* none.

RECEPT. naked, flat, (narrow. E.)

CICHO'RRIUM. (SUCCORY. E.) *Tourn.* 272. *Gærtn.* 157.

CAL. common, double, cylindrical. *Scales* eight, narrow, spear-shaped, equal, forming a cylinder, five of them shorter than, and lying upon, the others.

BLOSS. compound, flat, uniform. *Florets* hermaphrodite, twenty placed in a circle.

Individuals of one petal, strap-shaped, lopped, deeply divided into five teeth.

STAM. *Filaments* five, hair-like, very short. *Anthers* forming a pentagonal, hollow cylinder.

PIST. *Germen* oblong. *Style* thread-shaped, as long as the stamens. *Summits* two, revolute.

S. VESS. none. *Calyx* cylindrical, closing at the top.

SEEDS solitary, compressed, with about five angles. *Down* like chaff. the chaffy substances like bristles, numerous.

RECEPT. somewhat chaffy.

ARCTIUM. (BURDOCK. E.) *Tourn.* 256, *Lappa.* *Gærtn.* 162.

CAL. common, globular, tiled. *Scales* spear-shaped, terminating in awl-shaped prickles, and hooked at the points.

BLOSS. *compound*, tubular, uniform. *Florets hermaphrodite*, equal, (numerous. E.)

Individuals of one petal, tubular. *Tube slender*, very long. *Border* egg-shaped, with five clefts. *Segments strap-shaped*, equal.

STAM. *Filaments* five, hair-like, very short. *Anthems* forming a hollow cylinder, as long as the blossom, with five teeth.

PIST. *Germen* oblong, downy at the end. *Style* thread-shaped, longer than the stamens. *Summits* cloven, reflexed.

S. VESS. none. *Calyx* closing.

SEEDS solitary, inversely pyramidal, the two opposite angles indistinct, gibbous on the outer side. *Down* simple, shorter than the seed.

RECEPT. flat, covered with bristle-like, chaffy scales.

SERRATULA. (SAW-WORT. E.) *Gærtn.* 162.

CAL. *common*, oblong, nearly cylindrical, tiled. *Scales* numerous, spear-shaped, without awns.

BLOSS. *compound*, tubular, uniform. *Florets hermaphrodite*, equal.

Individuals of one petal, funnel-shaped. *Tube bent inwards*. *Border* protuberant, with five clefts.

STAM. *Filaments* five, hair-like, very short. *Anthems* forming a hollow cylinder.

PIST. *Germen* egg-shaped. *Style* thread-shaped, as long as the stamens. *Summits* two, oblong, reflexed.

S. VESS. none. *Calyx* remaining unchanged.

SEEDS solitary, inversely egg-shaped, (obscurely angular. E.) *Down* sessile, feathery, (or roughish, permanent. E.)

RECEPT. chaffy, flat.

CARDUUS. (THISTLE. *Gærtn.* 162. *Cnicus. Gærtn.* 163. *Willd. Sm. Eng. Fl. Cirsium. Hall. Tourn. Gærtn.* 163. E.)

CAL. *common*, protuberant, tiled. *Scales* numerous, spear-shaped, tapering to a point, spinous.

BLOSS. *compound*, tubular, uniform. *Florets hermaphrodite*, nearly equal, reflexed.

Individuals of one petal, funnel-shaped. *Tube* very slender. *Border* upright, egg-shaped at the base, with five clefts. *Segments* strap-shaped, equal, one more deeply divided.

STAM. *Filaments* five, hair-like, very short. *Anthems* forming a hollow cylinder, as long as the florets, with five teeth at the border.

PIST. *Germen* egg-shaped. *Style* thread-shaped, longer than the stamens. *Summits* simple, awl-shaped, naked, notched.

S. VESS. none. *Calyx* slightly converging.

SEEDS solitary, inversely egg-shaped, with four angles, hair-like, two opposite ones indistinct. (*Down* sessile, very long, roughish and hair-like, or feathery; annular at the base. E.)

RECEPT. hairy, flat.

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(*Obs.* Various plants usually comprehended under *Carduus*, have been, by some authors, detached to constitute the genus *Cnicus*, merely on account of the down of the seeds being plumose, or feathery, instead of capillary, or hair-like. A distinction so minute, by dismembering species intimately allied by nature, is scarcely calculated, we submit, to facilitate scientific investigation, though it might, possibly, prove available for the subdivisional arrangement of species. *E.*)

ONOPORDON. (ARGENTINE. E.) *Tourn.* 253, *Carduus*. *Gærtn.* 161.

CAL. common, orbicular, protuberant, tiled. *Scales* numerous, spinous, projecting on every side.

BLOSS. compound, tubular, uniform. *Florets* hermaphrodite, equal, very numerous.

Individuals of one petal, funnel-shaped. *Tube* very slender. *Border* upright, ventricose, with five clefts. *Segments* equal, one more deeply divided.

STAM. *Filaments* five, hair-like, very short. *Anthers* forming a hollow cylinder as long as the blossom, with five teeth.

PIST. *Germen* egg-shaped. *Style* thread-shaped, longer than the stamens. *Summit* notched.

S. VESS. none. *Calyx* closing a little.

SEEDS solitary. *Down* hair-like, sessile, (annular at the base. *E.*)

RECEPT. chaffy. *Chaff* lopped, but sharp-pointed, shorter than the seed, united so as to form deep cells.

(*Obs.* Very large, hoary, spinous herbs, often with winged stems, and spinous leaves. The honey-comb receptacle characterizes the genus, and its habit also is appropriate. *Sm.* *E.*)

CARLINA. (CARLINE-THISTLE. E.) *Tourn.* 285. *Gærtn.* 163.

CAL. common, tumid, radiate, tiled. *Scales* numerous, flexible, acute, the inner in a circle, very long, expanding, shining, coloured, forming rays to the compound flower.

BLOSS. compound, uniform, tubular. *Florets* hermaphrodite, equal.

Individuals of one petal, funnel-shaped. *Tube* slender. *Border* funnel-shaped, with five clefts.

STAM. *Filaments* five, hair-like, very short. *Anthers* forming a hollow cylinder.

PIST. *Germen* short, (inversely egg-shaped. *E.*) *Style* thread-shaped, as long as the stamens. *Summit* oblong, cloven or entire.

S. VESS. none. *Calyx* unchanged.

SEEDS solitary, rather cylindrical. *Down* divided into rays, somewhat chaff-like, branched, feathered.

RECEPT. flat, chaff-bristle-like, membranous, and a little united at the base, forming cells, with many clefts, rays awl-shaped. *Bristles* somewhat longer than the chaff, and club-shaped, intermixed.

BI'DENS. (BUR-MARIGOLD. DOUBLE-TOOTH. E.) *Tourn.* 262. *Gærtn.* 167. (Sm. E.)

CAL. *common*, tiled, upright; *leaflets* nearly equal, oblong, concave and channelled.

BLOSS. *compound*, uniform, tubular. *Florets hermaphrodite*, tubular.

Individuals of one petal, funnel-shaped. *Border* with five clefts, upright, (expanding. E.)

STAM. *Filaments* five, hair-like, very short. *Anthers* forming a hollow cylinder.

PIST. *Germen* oblong, (compressed, with two or more upright bristly points, about equal to the tube of the floret, on its outside. E.) *Style* simple, as long as the stamens. *Summits* two, oblong, reflexed.

S. VESS. none. *Calyx* unchanged.

SEEDS solitary, blunt, angular. *Down* two or more awns, oblong, straight, acute, rough with reflexed prickles.

RECEPT. chaffy, flat. *Chaff* deciduous, flattish, (upright. E.)

(OBS. Occasionally liable to acquire marginal, radiant, fertile florets, destitute of stamens. E.)

EUPATO'RIMUM. HEMP-AGRIMONY. E.) *Tourn.* 259. *Gærtn.* 166.

CAL. *common*, oblong, nearly cylindrical, tiled. *Scales* strap-spear-shaped, upright, unequal, unarmed. E.)

BLOSS. *compound*, uniform, tubular. *Florets hermaphrodite*, equal.

Individuals of one petal, funnel-shaped. *Border* with five clefts, expanding.

STAM. *Filaments* five, hair-like, very short. *Anthers* forming a hollow cylinder.

PIST. *Germen* very small, (angular. E.) *Style* thread-shaped, very long, cloven down to the anthers, straight. *Summits* slender, (downy, E.)

S. VESS. none. *Calyx* unchanged.

SEEDS solitary, oblong, (angular. E.) *Down* long, hair-like, or feathered, (sessile. E.)

RECEPT. naked, (small. E.)

CHRYSO'COMA. (GOLDY-LOCKS. E.) *Schreb.* 1275.

CAL. *common*, hemispheric, tiled; *Scales* strap-shaped, convex on the outside, pointed.

BLOSS. *compound*, tubular, longer than the calyx. *Florets hermaphrodite*, tubular, numerous, equal.

Individuals of one petal, funnel-shaped. *Border* with five clefts, rolled back.

STAM. *Filaments* five, thread-shaped, very short. *Anthers* forming a hollow cylinder.

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Pist. *Germen* oblong, crowned. *Style* thread-shaped, scarcely longer than the blossom. *Summits* two, oblong, depressed, rolled inwards.

S. VESS. none. *Calyx* scarcely changing.

SEEDS solitary, egg-oblong, compressed. *Down* hair-like, sessile, (copious, rough. E.)

RECEPT. naked, flat.

SANTOLINA. (COTTON-WEED. E.) *Tourn.* 260. *Gærtn.* 165. (*Diotis.* *Desfont.* *De Cand.* *Eng. Fl. Sm.* E.)

CAL. common, hemispherical, tiled. *Scales* egg-oblong, acute, laid close.

BLOSS. compound, uniform, longer than the calyx. *Florets hermaphrodite*, equal, numerous.

Individuals of one petal, funnel-shaped. *Border* with five clefts, (equal, spreading; tube contracted at the summit; elongated at the base on each side, below its insertion, into two opposite, compressed, equal nectariferous *spurs*, which finally separate from the rest of the tube and remain attached to the *germen*. E.)

STAM. *Filaments* five, hair-like, very short. *Anthers* forming a hollow cylinder.

Pist. *Germen* four-cornered, oblong. *Style* thread-shaped, as long as the stamens. *Summits* two, (spreading, obtuse. E.)

S. VESS. none. *Calyx* unchanged.

SEEDS solitary, oblong, (compressed, tapering at the base, bordered at each side, with the compressed, obtuse spurs of the blossom. E.) *Down* none.

RECEPT. (convex, nearly globular, small, beset with oblong, concave, downy-tipped scales, nearly as tall as the flowers. E.)

(**Obs.** However scientific may be the distinction, originally detected by Tournefort, which has induced some authors after Desfontaines to bestow on *S. maritima* the new generic designation of *Diotis*, (q. d. a pair of ears,) descriptive of the two spurs of each floret; since the general habit is strictly that of *Santolina*, we venture to retain the name by which it has been so long and universally recognized: E.)

POLYGAMIA SUPERFLUA.

TANACEUM. (TANSY. E.) *Tourn.* 261. *Gærtn.* 165.

CAL. common, hemispherical, tiled. *Scales* acute, compact.

BLOSS. compound, tubular, convex. *Florets hermaphrodite*, numerous, tubular, placed in the centre. *Florets female*, a few in the circumference: obsolete, sometimes none. E.)

Individual hermaphrodites, funnel-shaped. *Border* with five clefts, reflexed.

Individual females with three clefts, more deeply divided on the inner side.

STAM. *Filaments* five, hair-like, very short. *Anthers* forming a hollow cylinder.

PIST. *Germen* in the hermaphrodites, oblong, small. *Style* thread-shaped, as long as the stamens. *Summit* cloven, revolute.

Germen in the females oblong. *Style* simple. *Summits* two, reflexed.

S. VESS. none. *Calyx* unchanged.

SEEDS solitary, oblong, (angular. E.) *Down* a sort of membranous border.

RECEPT. convex, naked, (dotted. E.)

ARTEMISIA. (WORMWOOD. SOUTHERNWOOD. MUGWORT. E.) *Tourn.* 260. *Gärtn.* 164. (Absinthium. E.)

CAL. common, roundish, tiled. *Scales* rounded, approaching, (membranous at the edges. E.)

BLOSS. compound. *Florets* hermaphrodite, numerous, tubular, placed in the centre. *Florets* female, generally without any petal, in the circumference.

Individual hermaphrodites, funnel-shaped. *Border* with five clefts.

STAM. *Filaments* five, hair-like, very short. *Anthers* forming a hollow cylinder, with five teeth in the border.

PIST. *Germen* in the hermaphrodites, small. *Style* thread-shaped, as long as the stamens. *Summits* cloven, revolute.

Germen in the females very short. *Style* thread-shaped, longer than in the others. *Summit* the same.

S. VESS. none. *Calyx* but little changed.

SEEDS in all the florets solitary, naked, (obovate. E.)

RECEPT. flat, naked, or hairy.

Obs. In some species the receptacle is naked; in *A. absinthium* it is hairy; and the calyx is more globular. Linn.

GNAPHALIUM. (EVERLASTING. CUDWEED. E.) *Tourn.* 259. *Elychrysum.* *Gärtn.* 165.

CAL. common, roundish, tiled, bordering. The *scales* rounded, skinny, coloured.

BLOSS. compound. *Florets* hermaphrodite, tubular, sometimes mixed with female florets without petals.

Individual hermaphrodites, funnel-shaped. *Border* with five clefts, reflexed.

Individual females, without any petals.

STAM. *Filaments* five, hair-like, short. *Anthers* forming a hollow cylinder.

PIST. *Germen* in the hermaphrodites, egg-shaped, angular. E.) *Style* thread-shaped, as long as the stamens. *Summit* cloven.

Germen in the females, egg-shaped, (angular. E.) *Style* thread-shaped, as long as in the other florets. *Summit* cloven, reflexed.
S. VESS. none. *Calyx* permanent, shining, (coloured. E.)
SEEDS in all the florets solitary, oblong, small, crowned with *down*, which is hair-like, or feathered.
RECEPT. naked.

OBS. In *G. dioicum*, (*Antennaria montana*,) the male and female florets are on distinct plants; a circumstance very unusual in this Class. Linn.*

CONY'ZA. (SPIKENARD. E.) Gærtn. 166.

CAL. common, tiled, oblong, scurfy; *scales* acute, the outer a little expanded.
BLOSS. compound, tubular. *Florets hermaphrodite*, numerous, tubular, in the centre. *Florets female*, numerous, like the others, in the circumference.
Individual hermaphrodites, funnel-shaped. *Border* with five clefts, open.
Individual females, funnel-shaped. *Border* with three clefts.
STAM. *Filaments* five, hair-like, very short. *Anthems* forming a hollow cylinder.
PIST. *Germen* in the hermaphrodites, oblong. *Style* as long as the stamens, thread-shaped. *Summit* cloven.
Germen in the females oblong. *Style* thread-shaped, as long, but more slender than in the other florets. *Summits* two, very slender.
S. VESS. none. *Calyx* closing, (beset with the tips of the scales. E.)
SEEDS in all the florets solitary, oblong. *Down* simple, sessile. E.)
RECEPT. naked, nearly flat, (tuberculated. E.)

ERIG'ERON. (FLEA-BANE, E.) Gærtn. 170.

CAL. common, oblong, nearly cylindrical, tiled. * *Scales* awl-shaped, upright, gradually longer, nearly equal.
BLOSS. compound, radiate. *Florets hermaphrodite*, tubular, in the centre. *Florets female*, strap-shaped, in the circumference.
Individual hermaphrodites, funnel-shaped. *Border* with five clefts.
Individual females, narrow, between strap and awl-shaped, upright, generally very entire.
STAM. *Filaments* five, hair-like, very short. *Anthems* forming a hollow cylinder.
PIST. *Germen* in the hermaphrodites, very small, crowned with a down longer than the blossom. *Style* thread-shaped, as long as the down. *Summits* two, oblong, revolute.

* (For a further division of the genus *Gnaphalium*, see *Antennaria* of Gartner, and Brown's observations thereon, in Linn. Trans. v. xii. p. 123.

Germen in the females very small, crowned with down, nearly as long as its blossom. *Style* hair-like, as long as the down. *Summits* two, very slender.

S. VESS. none. *Calyx* converging.

SEEDS in all the florets oblong, small. *Down* long, hair-like.

RECEPT. naked, flat.

OBS. Sometimes a few male florets may be found in the centre.

TUSSILA'GO. (COLT'S-FOOT. BUTTER-BUR. E.) *Tourn.* 258. *Petasites.* *Gärtn.* 170.

CAL. common, cylindrical. *Scales* strap-spear-shaped, equal, fifteen or twenty, somewhat membranous, even with the top of the flower.

BLOSS. compound, various. *Florets hermaphrodite*, in some species all tubular, in others only tubular in the centre.

Florets female, in some species strap-shaped, in others entirely wanting.

Individual hermaphrodites, funnel-shaped. *Border* with four or five clefts, acute, reflexed, longer than the calyx.

Individual females, either wanting, or strap-shaped and very narrow, entire, longer than the calyx.

STAM. *Filaments* five, hair-like, very short. *Anthers* forming a hollow cylinder.

PIST. *Germen* in the hermaphrodites, short. *Style* thread-shaped, longer than the stamens. *Summit* thickish.

Germen in the females, short. *Style* thread-shaped, as long as the other. *Summit* thickish, cloven.

S. VESS. none. *Calyx* but little changed, (finally reflexed. E.)

SEEDS in all the florets solitary; oblong, compressed. *Down* hair-like, (silvery, sessile, not pedicellate. E.)

RECEPT. naked.

OBS. *T. hybrida* and *T. petasites* have no strap-shaped florets in the circumference, but female florets, without blossoms. *T. farfara* has always strap-shaped florets in the circumference, which are female. Linn. (The seeds rarely come to perfection; but these plants increase greatly by root. E.)

SENE'CIO. (GROUNDSEL. RAGWORT. E.) *Tourn.* 260. *Gärtn.* 166.

CAL. common, double, conical, lopped. *Scales* awl-shaped, numerous, contiguous, equal, black, shrivelled, and as if dead at the points. E.) parallel, contracted above into a cylinder, the base tiled by a few scales.

BLOSS. compound, taller than the calyx. *Florets hermaphrodite* tubular, numerous, in the centre. *Florets female*, (if any,) in the circumference, strap-shaped.

Individual hermaphrodites, funnel-shaped. *Border* reflexed, with five clefts.

Individual females, (if any,) oblong, with three indistinct teeth.

STAM. *Filaments* five, hair-like, very small. *Anthers* forming a hollow cylinder.

PIST. *Germen* in both sorts of florets egg-shaped, (small. E.) *Style* thread-shaped, as long as the stamens. *Summits* two, oblong, expanding.

S. VESS. none. *Calyx* closing so as to form a cone.

SEEDS in both sorts of florets solitary, egg-shaped. *Down* hair-like, long.

RECEPT. naked, (tessellated, nearly flat. E.)

OBS. In some species the florets are all tubular; in others those of the circumference are strap-shaped. Linn.

ASTER. (STAR-WORT. E.) *Tourn.* 274. *Gærtn.* 170.

CAL. *common*, tiled, the inner scales standing out at the points, the lower fully expanded.

BLOSS. *compound*, radiate. *Florets hermaphrodite*, numerous in the centre. *Florets female*, ten, or more, strap-shaped, in the circumference.

Individual hermaphrodites, funnel-shaped. *Border* with five clefts, open.

Individual females, narrow, spear-shaped, with three teeth, finally revolute.

STAM. *Filaments* five, hair-like, very short. *Anthers* forming a hollow cylinder.

PIST. *Germen* in the hermaphrodites, oblong. *Style* thread-shaped, as long as the stamens. *Summit* cloven, expanding.

Germen in the females, oblong. *Style* the same as the other. *Summits* two, oblong, revolute.

S. VESS. none. *Calyx* but little changed.

SEEDS in all the florets, solitary, oblong, or egg-shaped. *Down* hair-like, (sessile. E.)

RECEPT. naked, nearly flat.

SOLIDA GO. (GOLDEN-ROD. E.) *Tourn.* 275. *Virga aurea.*
Gærtn. 170.

CAL. *common*, oblong, tiled; *scales* oblong, narrow, tapering to a point, straight, converging.

BLOSS. *compound*, radiate. *Florets hermaphrodite*, tubular, numerous, in the centre. *Florets female*, strap-shaped, not exceeding ten, (mostly five) in the circumference.

Individual hermaphrodites, funnel-shaped. *Border* with five clefts, open.

Individual female, narrow, spear-shaped, with three teeth.

STAM. *Filaments* five, hair-like, short. *Anthers* forming a hollow cylinder.

PIST. *Germen* in the hermaphrodites, oblong. *Style* as long as the stamens, thread-shaped. *Summit* cloven, expanding.

Germen in the females, oblong. *Style* thread-shaped, as long as the other. *Summits* two, revolute.

S. VESS. none. *Calyx* but little changed.

SEEDS in all the florets solitary, inversely egg-shaped, oblong. *Down* hair-like, (sessile. E.)

RECEPT. flat, naked, (slightly cellular. E.)

CINERA'RIA. (FLEA-WORT. E.) *Cartn.* 170.

CAL. common, simple, of many leaves. *Leaflets* equal.

BLOSS. compound, radiate. *Florets hermaphrodite*, equal, numerous, in the centre. *Florets female*, strap-shaped, equal in number to the leaves of the calyx, in the circumference.

Individual hermaphrodites, funnel-shaped, with five clefts, upright.

Individual females, narrow, spear-shaped, finely toothed at the end.

STAM. *Filaments* five, thread-shaped, short. *Anthers* forming a hollow cylinder, with five clefts at the top.

PIST. *Germen* in the hermaphrodites, oblong. *Style* thread-shaped, as long as the stamens. *Summits* two, rather upright.

Germen in the females, oblong. *Style* thread-shaped, short. *Summits* two, oblong, rather blunt, rolled back.

S. VESS. none. *Calyx* unchanged.

SEEDS in all the florets solitary, striated, quadrangular. *Down* hair-like, in large quantity, (sessile, but longer than the seed. E.)

RECEPT. naked, nearly flat, (pitted. E.)

I'NULA. (ELECAMPANE. E.) *Cartn.* 170.

CAL. common, (hemispherical, E.) tiled. *Leaflets* flexible, open, the outer ones the largest, equal in length.

BLOSS. compound, radiate, broad. *Florets hermaphrodite* equal, very numerous, in the centre. *Florets female*, strap-shaped, numerous, crowded, in the circumference.

Individual hermaphrodites, funnel-shaped. *Border* with five clefts, somewhat upright.

Individual females, narrow, strap-shaped, (tri-dentate. E.)

STAM. *Filaments* five, thread-shaped, short. *Anthers* five, narrow, united, forming a hollow cylinder, each anther ending at the base in two straight bristles, as long as the filaments.

PIST. *Germen* in the hermaphrodites, oblong. *Style* as long as the stamens, thread-shaped. *Summit* cloven, nearly upright.

Germen in the females oblong. *Style* thread-shaped, a little cloven. *Summits* upright.

S. VESS. none. *Calyx* unchanged.

330 SYNGENESIA. POLYGAMIA SUPERFLUA.

SEEDS in all the florets, solitary, strap-shaped, quadrangular. *Down* hair-like, as long as the seed, (scssile. E.)

RECEPT. naked, flat.

OBS. The ten bristles at the base of the cylinder formed by the anthers, distinguish this from most other genera.

DORONICUM. (LEOPARD'S-BANE. E.) *Tourn.* 277. *Gærtn.* 173.

CAL. common, with spear-awl-shaped *leafits*, about twenty, equal, upright, in two rows, often as long as the rays of the blossom.

BLOSS. compound, radiate. *Florets hermaphrodite*, tubular, numerous, in the centre. *Florets female*, strap-shaped, equal in number to the leaves of the calyx, in the circumference.

Individual hermaphrodites, funnel-shaped. *Border* with five clefts, segments open.

Individual females, narrow, spear-shaped, with three (to five) teeth.

STAM. *Filaments* five, hair-like, very short. *Anthers* united, forming a hollow cylinder, (with five notches. E.)

PIST. *Germen* in the hermaphrodites, oblong. *Style* thread-shaped, as long as the stamens. *Summit* notched, (spreading. E.)

Germen and *Style* in the females, the same. *Summits* two, reflexed.

S. VESS. none. The *Calyx* slightly converging.

SEEDS in the *hermaphrodites* solitary, inversely egg-shaped, compressed, furrowed. *Down* hair-like, (sessile. E.)

In the *females* the same, only slightly compressed. *Down* wanting.

RECEPT. naked, nearly flat, (pitted. E.)

BELLIS. (DAISY. E.) *Tourn.* 280. *Gærtn.* 168.

CAL. common hemispherical, upright. *Leafits* from ten to twenty, in a double row, spear-shaped, equal.

BLOSS. compound, radiate. *Florets hermaphrodite*, tubular, numerous, in the centre. *Florets female* strap-shaped, more in number than the leaves of the calyx, in the circumference.

Individual hermaphrodites, funnel-shaped, with five clefts.

Individual females, narrow, strap-shaped, very slightly marked with three teeth.

STAM. *Filaments* five, hair-like, very short. *Anthers* forming a hollow (notched, E.) cylinder.

PIST. *Germen* in the hermaphrodites, egg-shaped. *Style* simple. *Summit* notched.

Germen in the females egg-shaped. *Style* thread-shaped. *Summits* two, standing wide.

S. VESS. none. *Calyx* unchanged.

SEEDS in all the florets, solitary, inversely egg-shaped, compressed.

Down none.

RECEPT. naked, conical, (hollow. E.)

CHRYSANTHEMUM. (OX-EYE. E.) *Tourn.* 280. *Gærtn.* 168.

CAL. *common*, hemispherical, tiled. *Scales* lying close upon each other; the *inner* gradually larger; the very innermost terminating in a (membranous, filmy, appendage. E.)

BLOSS. *compound*, radiate. *Florets hermaphrodite*, numerous, tubular, in the centre. *Florets female*, twelve or more, in the circumference.

Individual hermaphrodites, funnel-shaped, with five clefts, open, as long as the cup.

Individual females, strap-shaped, oblong, with three teeth.

STAM. *Filaments* five, hair-like, short. *Anthers* forming a hollow (notched, E.) cylinder, generally shorter than the blossom.

PIST. *Germen* in the hermaphrodites; egg-shaped. *Style* thread-shaped, longer than the stamens. *Summits* two, revolute.

Germen in the females, egg-shaped. *Style* thread-shaped, as long as the other. *Summits* two, blunt, revolute.

S. VESS. none. *Calyx* unchanged.

SEEDS in all the florets, solitary, oblong (grooved. E.) *Down* none.

RECEPT. naked, convex, (slightly tessellated. E.)

(PYRETHRUM. FEVERFEW. Hall. Hist. Willd. Sp. Pl. Gærtn. Matricaria. Tourn. Lam.

CAL. *common*, hemispherical, closely imbricated, with several oblong, nearly equal, bluntish scales; bordered with an equal membrane all around.

BLOSS. *compound*, radiant; *florets* of the *disk* numerous, perfect, tubular, with five equal, spreading segments; those of the *radius* numerous, ligulate, spreading, elliptic-oblong, with three terminal teeth.

STAM. *Filaments* in the tubular florets only, capillary, short. *Anthers* in a cylindrical tube.

PIST. *Germen* in all the florets angular, abrupt. *Style* thread-shaped, not prominent. *Summits* spreading, obtuse, somewhat notched.

S. VESS. none; the *calyx* remaining unchanged.

SEEDS in all the florets oblong, angular, abrupt, furrowed, crowned with an elevated membranous border.

RECEPT. naked, convex. Sm. Eng. Fl. E.)

MATRICA'RIA. (WILD CHAMOMILE. E.) *Tourn.* 281. *Gærtn.* 168.

CAL. *common*, hemispherical, (or nearly plane. E.) *Scales* strap-shaped, tiled, not quite equal, (membranous at the edges. E.)

BLOSS. *compound*, radiate. *Florets hermaphrodite*, tubular, numerous, in the centre, which is hemispherical. *Florets female*, many, in the circumference.

Individual hermaphrodites, funnel-shaped, with five clefts, expanding.

Individual females, oblong, with three teeth.

STAM. *Filaments* five, hair-like, very short. *Anthers* forming a hollow cylinder.

PIST. *Germen* in the hermaphrodites, oblong, naked, (angular. E.) *Style* as long as the stamens, thread-shaped. *Summit* cloven, expanding.

Germen in the females, naked, (angular. E.) *Style* thread-shaped, nearly as long as in the others. *Summits* two, revolute.

S. VESS. none. *Calyx* unchanged.

SEEDS in all the florets, solitary, oblong, (angular. E.) *Down* none.

RECEPT. naked, (sub-cylindrical, hollow. E.)

ANTHEMIS. (CHAMOMILE. E.) *Tourn.* 281, *Chamæmelum*.
Gærtn. 169. (Sm. E.)

CAL. *common*, hemispherical, (closely tiled. E.) *Scales* strap-shaped, nearly equal.

BLOSS. *compound*, radiate. *Florets hermaphrodite*, tubular, numerous, in the centre, which is convex. *Florets female*, more than five, in the circumference.

Individual hermaphrodites, funnel-shaped, with five teeth, upright,

Individual females, narrow, spear-shaped, sometimes with three teeth.

STAM. *Filaments* five, hair-like, very short. *Anthers* forming a hollow cylinder.

PIST. *Germen* in the hermaphrodites, oblong. *Style* as long as the stamens, thread-shaped. *Summits* two, reflexed.

Germen in the females, oblong. *Style* the same as in the others. *Summits* two, revolute.

S. VESS. none. *Calyx* unchanged.

SEEDS in all the florets solitary, oblong. *Down* none, or only a slight border.

RECEPT. conical or convex, (bearing one spear-shaped, chaffy scale to each tubular floret. E.)

(**Obs.** *Anthemis* is chiefly distinguished from the preceding genera by its scaly receptacle. E.)

ACHILLEA. (YARROW. E.) *Tourn.* 283, *Millefolium*.
Gærtn. 168. (Sm. E.)

CAL. *common*, egg-shaped, tiled. *Scales* egg-shaped, acute, converging.

BLOSS. *compound*, radiate. *Florets hermaphrodite*, tubular, in the centre. *Florets female*, five to ten, strap-shaped, in the circumference.

Individual hermaphrodites, funnel-shaped, with five clefts, open.

Individual females strap-shaped, inversely heart-shaped, (peculiarly short and rounded, E.) expanding, cloven into three segments, the middlemost the smallest.

STAM. *Filaments* five, hair-like, very short. *Anthers* forming a hollow cylinder.

PIST. *Germen* in the hermaphrodites, small. *Style* thread-shaped, as long as the stamens. *Summit* blunt, notched at the end.

SYNGENESIA. POLYGAMIA FRUSTRANEA. 333

Germen in the females small. *Style* thread-shaped, as long as the other.

Summits two, blunt, reflexed.

S. VESS. none. *Calyx* but little changed. *Receptacle* thread-shaped, lengthens out when laden with the seeds, egg-shaped, and twice as long as the calyx.

SEEDS in all the florets, solitary, egg-shaped, (abrupt. E.) *Down* none.

RECEPT. chaffy, slightly elevated. *Chaff* spear-shaped, as long as the florets.

(OBS. In character *Achillea* more nearly resembles *Anthemis* than in habit ; but the short, broad, rounded florets of the circumference, are peculiar to the former. E.)

POLYGAMIA FRUSTRANEA.

CENTAUREA. (KNAPWEED. STAR-THISTLE. E.) *Tourn.*
254 and 256. *Gærtn.* 161, *Cyanus.*

CAL. common, tiled, roundish ; *scales* terminating variously.

BLOSS. compound, florets all tubular, but of different shapes. *Florets hermaphrodite*, many, in the centre. *Florets female* not so numerous, larger, more flexible, in the circumference.

Individual hermaphrodites, of one petal. *Tube* thread-shaped. *Border* tumid, oblong, upright, terminating in five, strap-shaped upright segments.

Individual females, of one petal, funnel-shaped. *Tube* slender, gradually becoming wider, bent backwards. *Border* oblong, oblique, unequally divided.

STAM. *Filaments* five, hair-like, very short. *Anthers* forming a hollow cylinder, as long as the blossom.

PIST. *Germen* in the hermaphrodites small. *Style* thread-shaped, as long as the stamens. *Summit* very blunt, in many cloven, with a prominent point.

• *Germen* in the females, very small, (or having only the rudiments of one. E.) *Style* next to none. *Summit* none.

S. VESS. none. *Calyx* unchanged, closing.

SEEDS in the hermaphrodites only solitary. *Down* mostly feathered, sometimes hair-like, (in some wanting. E.)

RECEPT. bristly.

OBS. The scales of the calyx, and the down of the seeds, are different in different species. *Linn.*

POLYGAMIA NECESSARIA.

CALEN'DULA. (MARIGOLD. E.) *Tourn.* 284, *Caltha. Gærtn.* 168.

CAL. *common*, simple, of many leaves, rather upright. *Segments* strap-spear-shaped, fourteen to twenty, nearly equal.

BLOSS. *compound*, radiate. *Florets hermaphrodite* many, in the centre. *Florets female* numerous, very long, in the circumference; as many as the scales of the calyx.

Individual hermaphrodites, tubular, with five shallow clefts, as long as the calyx.

Individual females, strap-shaped, very long, with three teeth, without nerves, woolly at the base.

STAM. *Filaments* five, hair-like, very short. *Anthers* united to form a hollow cylinder, as long as the blossom.

PIST. *Germen* in the hermaphrodites, oblong. *Style* thread-shaped, scarcely so long as the stamens. *Summit* blunt, cloven, straight.

Germen in the females, oblong, three-sided. *Style* thread-shaped, as long as the stamens. *Summits* two, oblong, pointed, reflexed.

S. VESS. none. *Calyx* closing, roundish, depressed.

SEEDS in the hermaphrodites in the centre, none: more outwardly, few, solitary, membranous, inversely-heart-shaped, compressed.

In the females (in the circumference) solitary, larger, oblong, bent inwards, triangular, membranous at the angles, marked on the outer side lengthwise, as if engraved with the figure of a plant. *Down* none.

RECEPT. naked, flat.

CLASS XX.

CRYPTOGAMIA.

It is well known that the attention of Linnæus was much less engaged by the Class Cryptogamia, than by the other Classes which are formed of plants with more obvious fructification. It was his glory to have established a system upon the organs of generation, (the stamens and pistils), the most essential parts of a plant, and this system he has wrought up to such a state of perfection, that little, compared to what he himself has done, remains for his successors to do; except the additions it may receive from more extended researches in countries imperfectly, or not at all explored. But the plants of the Cryptogamia Class, not falling under his peculiar system, were to him less interesting, and therefore, probably, less attended to. Of

the four Natural Orders into which he divided this Class, he seems chiefly to have improved our knowledge of the *Filices*. The *Musci* and the *Algæ* had been so successfully examined, and so excellently figured, by Micheli and Dillenius; and Gmelin having done much on the subject of the *Fuci*, there remained, in these extensive tribes, but little more for Linnaeus to do, than to distribute and characterize them according to his own ideas. The *Fungi*, at one time, attracted his attention, but the difficulty of preserving them in a state fit for comparing together, and the impracticability of transporting his books along with himself in his various journies, seem to have checked his pursuits; neither could he benefit, as we now do, by the almost innumerable figures which have been published since the formation of his system. From these causes he has done but little in the *Fungi*, and that little has been ill understood. Our countryman, the excellent Ray, paid great attention to these subjects; but for want of figures, or more extended descriptions, it is often difficult, sometimes impossible, to determine his species.*

It has just been observed, that we are indebted for the knowledge we have of the Mosses, the Lichens, and most of the other genera of the *Algæ*, to the indefatigable industry of Dillenius, and the sagacious scrutiny of Micheli; from these authors, therefore, as well as from the *Historia Fucorum* of Gmelin, the reader will find the most important parts of the descriptions extracted and subjoined to each species. These can hardly fail to be considered as acceptable additions to the present work, not only because none can be expected to describe these plants better than those who have figured them so well, but also on account of the great scarcity of the original work of Dillenius, which few are so fortunate as to possess. The copies printed were only two hundred and fifty, and of these but few remain in England. Impressions of his plates are easily obtained, and the scarcity of the letter-press will, hereafter, in this country, be the less regretted. Nor have the labours of Jacquin, or Hoffman, of Wiegell, or of Batsch, of Pollich, or of Weis, been neglected; they, and several others, now contribute to the illustration of the species, and to the instruction of the English Botanist. It must be observed that, on these occasions, the author has not aimed at a literal translation: he has endeavoured to catch the ideas of the writers, and to communicate them to his readers in as small a compass as the English language would permit, carefully assigning to

* (The general sketch of the Cryptogamic department of Botany offered by the author in these few pages, was accordant with the then state of the science; and indeed, with the addition of corrected characters, some explanatory notes, and numerous synonyms, must suffice at the present period; for were the actual discoveries and theoretical suggestions of ingenious modern writers, together with each species of this most extensive tribe of plants, to be inserted, this work would entirely lose its moderate compass and general utility, and, after all, be incomplete without an expensive series of graphic illustration. Experienced Botanists will find the advantage of consulting those elaborate performances, both of our own countrymen and foreigners, in which the *arcana* of nature are in a still greater degree revealed; and including, according to the respective systems of each author, from ten to fifteen Orders, from one hundred and fifty to more than two hundred Genera, and Species almost innumerable; those already observed in Britain amounting to more than a thousand. E.)

each the share they have contributed. But in bringing my readers to an acquaintance with this Class, it would be unpardonable to make no mention of the illustrious Hedwig, who has immortalized his name by the accuracy of his researches, and the splendour of his discoveries, in these obscure families of plants. He communicated the result of his observations to the Academy of Sciences at Petersburg, in the year 1783.* As this work is but little known to the English Botanist, I shall subjoin the following compendious view of the subject, confining myself principally to the discoveries more immediately relating to the parts of fructification. Those who wish for further information, cannot fail of being highly gratified by an examination of the original work, and by a perusal of this very ingenious author's subsequent publications.

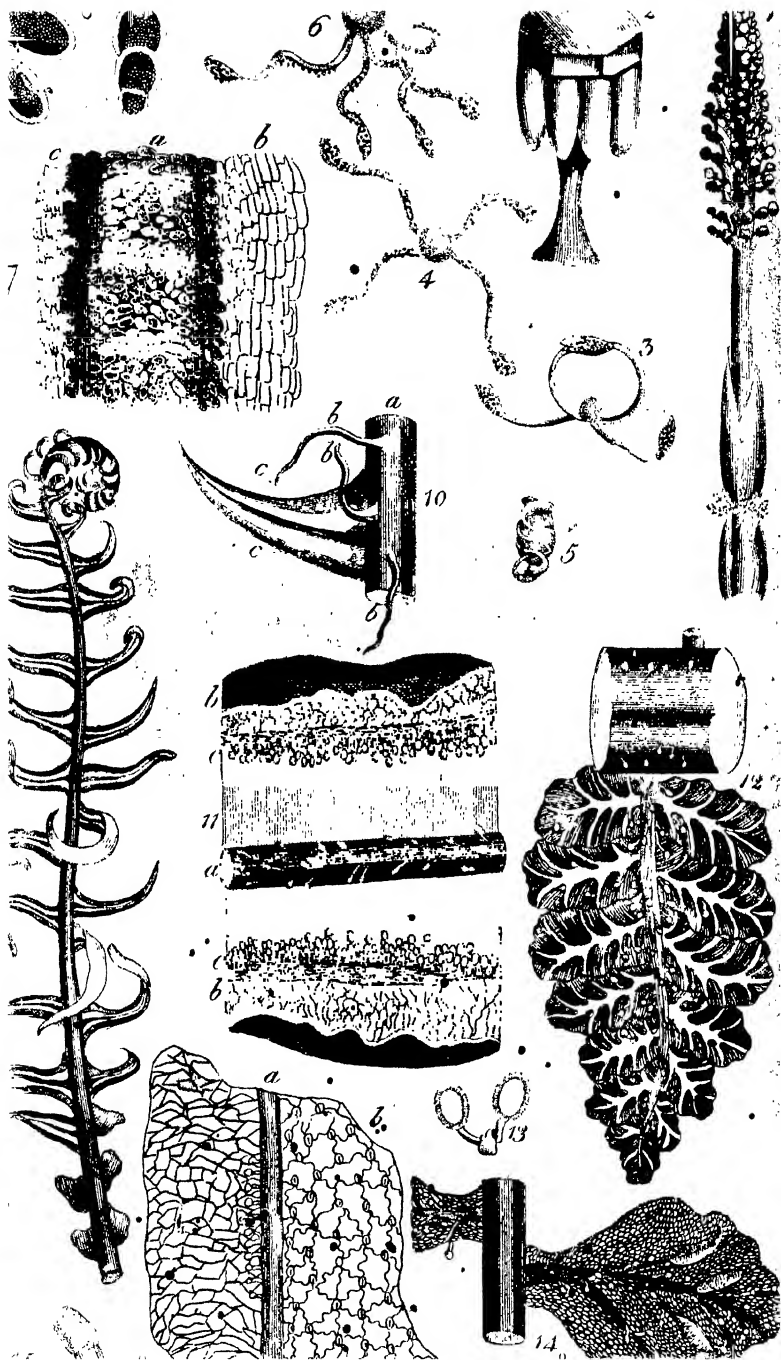
He introduces his subject with an account of the views of his predecessors in this branch of Natural History, and though he mentions the mistakes in which many of them had been involved, he does ample justice to those who had anticipated him in any part of his discoveries.

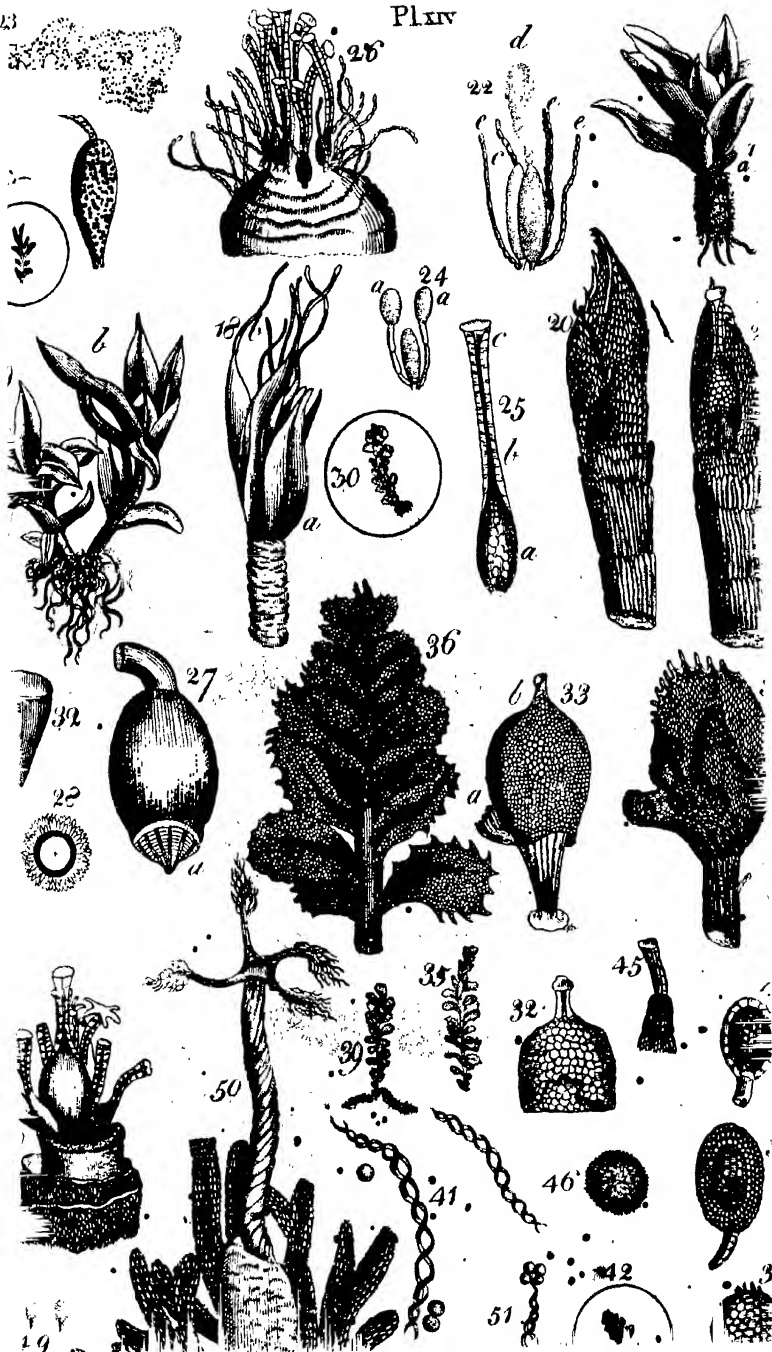
(Cryptogamic plants differ from those of all the other Classes both in their structure and reproductive organs. In structure they are for the most part, as generally supposed, simply cellular, ("cellulares" of De Candolle); though the *Filices* and some others certainly possess longitudinal tubular vessels, (constituting the "vasculares" of De Candolle). In their reproductive organs, Cryptogamic plants differ in wanting stamens and pistils; and in their seeds being destitute of cotyledon, radicle, and plumule, (in short, having no embryo, any more than the bulbs upon the stalks of the Onion tribe, or upon *Polygonum viviparum*, which yet produce perfect plants,) but having the power of striking root indifferently from any part of their surface. Such seeds have received the name of Sporules, Sporulæ, *Spora*, *Gongylæ*, &c. Hook. Grev. E.)†

They may be divided into the following orders or assemblages: 1. MISCELLANÆ; 2. FILICES; 3. MUSCI; 4. HEPATICÆ; 5. ALGÆ; 6. FUNGI. Concerning each of these we shall now speak more particularly.

* See *Theoria Generationis et Fructificationis Plantarum Cryptogamicarum* Linnæi. — Petropoli, 1784, quarto.

† (Mr. Thomson, in his *Lectures*, remarks concerning these simplest of plants, that "we perceive scarcely any trace of a vascular structure, the whole plants appearing to be little more than an aggregation of cellular substance enclosed in a cuticle. This appearance arises in some degree from the transparency of the vessels preventing them from being distinguished from the cells, and partly from the simplicity of their structure; for, as the fluid they convey is not required to be raised to considerable heights, as in the more perfect plants, the conducting tube is consequently more simple. Under the microscope, however, even in some minute Mosses, vessels anastomosing with one another, and cuticular pores, may be detected." E.)





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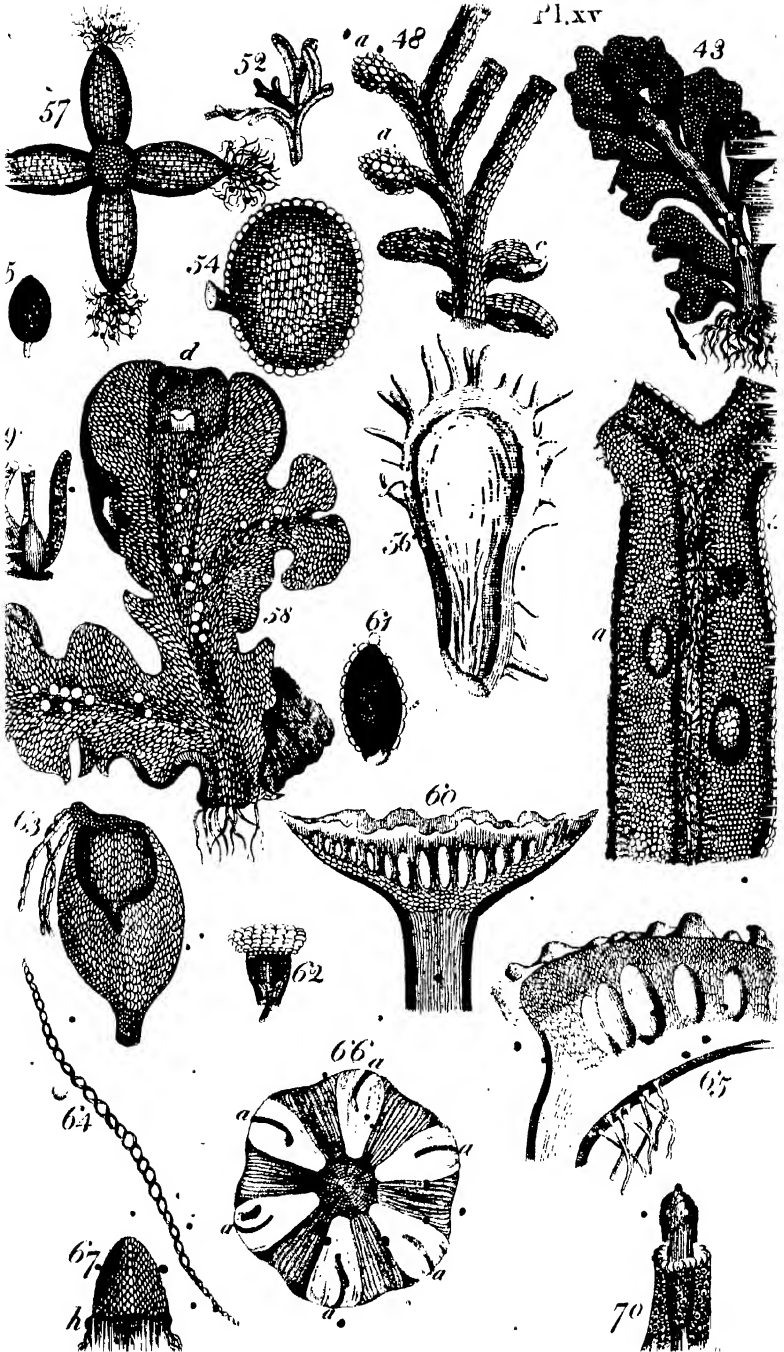
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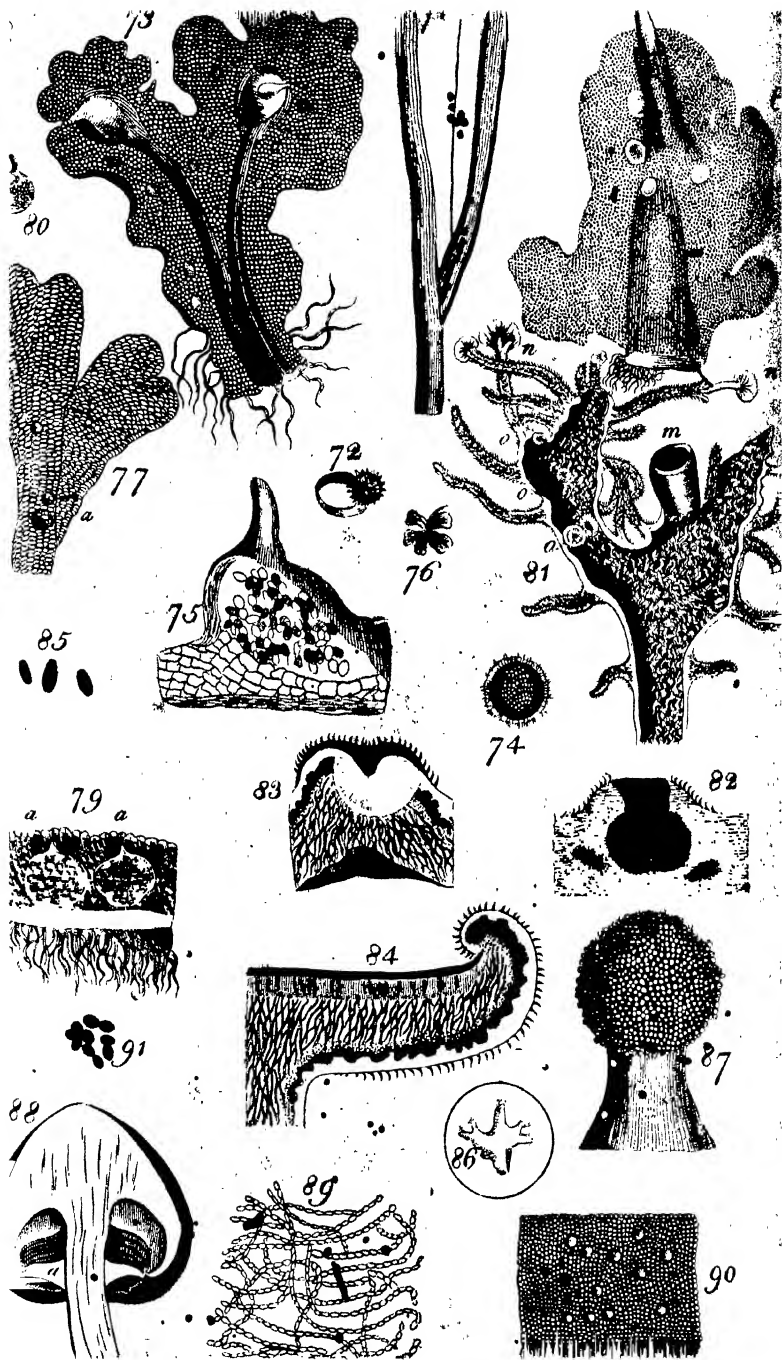
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MISCELLANÆ. (Schreb.) Miscellaneous.

The plants comprised in this Order are such as are incapable of being arranged under any of the subsequent Orders, neither do they agree one with another. (They are more or less aquatic; in *Isòetes* the leaves resemble those of a young Rush. The fructification of these plants is situated at, or very near, the root as in *Pilularia*. The vegetation of *Equisetum* is remarkable, being regularly articulated both in the stem, and branches, each articulation arising from a tubular sheath. Græv. E.) They are reducible to some one of the following Genera:

*Equisetum.**Lycopodium.**Pilularia.**Isòetes.*

EQUISETUM. Hedwig illustrates the structure of this genus by a particular examination of *E. sylvaticum*, and *E. palustre*. The former, as well as *E. arvense*, protrudes its club-shaped head out of the earth early in the spring. Round this head are placed, in circles, target-shaped substances, each supported on a pedicle, and compressed into angles in consequence of resting against each other previous to the expansion of the spike. Pl. xiii. f. 1. c. f. Beneath each of these targets we find from four to seven conical substances, with their points leaning a little inward towards the pedicle. fig. 2. f. They open on the inner side, and upon shaking them over a piece of paper, a greenish powdery mass falls out, which at first is full of motion, but soon after looks like cotton or tow. So far may be discerned by the naked eye, but a good microscope discovers green oval bodies, and attached to each of them, generally, four pellucid and very slender filaments, spoon-shaped at the end. f. 3. 4. These are almost constantly in motion, contracting upon the least breath of moist air, and when wet with water rolling round the oval body. f. 5.

In *E. palustre* the filaments are broader, and the green oval or globular substance more pointed. f. 6. This is undoubtedly the *Seed*, for it gradually increases in bulk, and when it falls, the spike shrivels. Its projecting point is the *Summit*, and the conical substances under the targets are the *Capsules*.

The scales which surround the flowering stalk at certain distances after its protrusion, served whilst it was yet young, as a general fence to the spike.

Hence it appears, that the genus *Equisetum* contains both stamens and pistils, within the same calyx.

The flowering *Spike*, or general calyx, scaly and tiled; the partial calyx target-shaped.

Filaments two. *Anthers* four, one at each end of the filament.

Summit single.

Capsule a target of four, five, six, or seven cells.

Seeds numerous, egg-shaped or globular; placed upon, and wrapped up within the filaments.

For the other three genera in this assemblage, the reader is desired to look forward to their respective generic characters.

FILICES. (Ferns.)

The plants of this Order have their fructification generally disposed in spots or lines on the under surface of the leaves, or frond, as in *Asplenium*, (plate I. B.) but sometimes in spikes, as in *Osmunda*.

Male flowers.

ANTHERS sessile, or supported on a very short filament, egg-shaped or globular, scattered on the under surface of the frond.

Female flowers, uniting so as to form a *spike*, or collected into a *bunch*; or forming *lines* or *dots*, which are found underneath the frond, either on the surface, at the edge, or at the point; and in some instances entirely covering the whole under surface.

CALYX none, or only a scale formed from the leaf, opening, containing globules.

BLOSS. none.

PIST. A *globule* sessile, or supported on a pedicle. *Style* none.

S. VESS. *Capsule* sessile, or on a pedicle, nearly globular; in most instances surrounded by an elastic and jointed ring* which is produced from the pedicle; opening transversely when ripe, and discharging the seeds.

SEEDS many, very minute, globular. Schreb.†

In the months of September and October this curious mechanism is very evident in the Common Brakes, (*PTERIS*), or in the Hart's-tongue, (*ASPLENIUM Scolop.*) by the assistance of a good single Microscope with a reflecting speculum. The sudden jerk of the springing cord frequently carries the object out of the field of view, so that it requires some patience to observe the whole of the process.

As there are no certain distinctions in the flowers themselves sufficient to establish the genera, these are known by the disposition of the seeds under their covers, (*Sori*, and the direction in which the Involucrum separates. E.)

OPHIOGLOSSUM vulgatum. Examining the spike in its advanced state, with a moderate magnifier, we find columns on each side, with cavities opening transversely, scattering a powder, and beset with innumerable *eminences* tiled one upon another like scales. With a very fine knife slice off a portion, so that it may have a little of the column on each side. Examine this in a compound microscope, reflecting the light through it. Transverse lines will then appear, which, as well as the interstices between them, are more opaque than the part on each side. Pl. xiii. f. 7. It is easy to scrape off some of the *eminences* with the back of a knife; put them into a little water, and use higher and higher magnifying powers; you will then discover simple and compound bodies, mostly oval, surrounded with a more pellucid line, and containing a granulated substance within. f. 8.

* (Hence the distinction of *annulata*, annulated, or *exannulata*, destitute of the annular appendage. E.)

† (Whether the seeds of the *Filices* be truly monocotyledonous, as De Candolle asserts, is not yet completely proved. They germinate readily. E.)

Others may decide whether the leaf in this plant answer the purpose of an Involucre or Calyx whilst it is in flower; but I consider the spike as bearing both Stamens and Pistils; the *Anthers* occupying the interstices of the Germens, which are furnished with a transverse *Summit*.

It may be remarked that the Spike is at first yellowish, changing to brown, when the Capsules open and discharge their powder. This powder is the real seed, for after its discharge the plant gradually perishes, though new shoots are sent out the ensuing year.

OSMUNDA spicant. Hedwig thinks this undoubtedly belongs to the genus *Acrostichum*, but we rather refer it, with Dr. Smith, to *Blechnum*.

Early in the spring the flowering leaves come up, almost rolled into a ball, and not the leaves only, but the leaflets also are rolled up. f. 9. On the back of each of these leaflets are two white lines, extending from the base of the leaflet to the point; they are bordered with green, and depressed in the middle. f. 10. These white lines are fine membranes, and on carefully separating them at their union with the leaflet, we discover very minute pellucid bodies, supported upon footstalks. f. 11. c. c.

In the younger leaflets, by the assistance of high magnifiers, we may discover small bodies of a brownish cast, composed of two parts, the one very slender and pellucid, proceeding from the rib, the other a coloured oval globule standing upon it. Pl. 13. f. 11. When the leaflet is fully unfolded, and the lines become more turgid, these corpuscles upon the rib disappear. Hedw.

POLYPODIUM Thelypteris. This, as Hedwig observes, does not well rank with the *Acrosticha*, to which genus Linnaeus referred it. The disposition of its fructification accords with the *Polypodia*.

Schmidel. Icon. Plant. t. xi. 13. p. 45. has delineated and described this plant so accurately, that nothing remains to be added, but that the vesicles of a shining yellow colour, viz. the *Anthers*, are found upon the rib and its ramifications, as well as upon the projecting edges of the membranes which cover the clusters of seed vessels. Hedw.

POLYPODIUM F. femina. When it first springs out of the earth and is yet in its curled state, we find by the assistance of a good microscope, the back of the leaflets covered with turgid capsules. f. 12. On the under side, abundance of spherules of a milky colour, supported upon pedicles.

Under the highest magnifier, these substances appear to consist of a very pellucid and tender pedicle, supporting a nearly opaque globule filled with a granulated mass. f. 13.

When the leaflets and leaf are quite unfolded, all these substances disappear, whilst those on the under surface gradually enlarge, and ripe their seed. Hedw.

ASPLENIUM Trichomanes. Whilst this springs out of the ground, and is yet rolled inwards, the leaflets are very minute and fleshy. On their under surface, when highly magnified, crescent-shaped membranes may be perceived covering the minute grains, which afterwards become capsules. f. 14. At the same time, but chiefly towards the middle nerve of the leaflet, white shining globules are found. These put into a drop of water, and viewed with the highest magnifier, will be seen to consist of a thick and very transparent foot-stalk, supporting a globule filled with a granulated mass. f. 1.

It is unnecessary to be particular respecting *A. Scolopendrium*, *A. Ruta-muraria*, *Polypodium Filix Mas*, *P. Phacopteris*, *P. Dryopteris*, all which I have examined in a recent state, and in all which I have found similar organs, at the time the leaves first put forth.

The membranous scaly productions upon the stalks, so plentiful in some species, have probably been the coverings of the now expanding parts, during the winter seasons.

No doubt exists as to the uses of the other parts, described above. None of these are found in the full grown plant. It is well known that whilst perennial plants ripen their seeds, the formation of new fructifications is going on. It is shown that the *Equiseta* perform their impregnations before they spring up. When the curled-up leaves of the Ferns begin to unfold, the capsules are generally swollen; this is particularly obvious in *Osmunda regalis*, whose fertile leaves shoot up early in the spring, and ripen their capsules in July.

These capsules are certainly real Seed-vessels, sometimes opening vertically, and sometimes horizontally into two hemispheres, which are surrounded by an elastic ring. Hedw.*

* (Bernhardi has endeavoured to establish an ingenious theory in opposition to that described in the preceding pages. He is of opinion that the small round bodies in the pellicles on the margin of the leaves are pollen, and that the pellicles in the middle are stigmas. The male organs, after the leaves have attained their full growth, show themselves at the same period with the female. When the globules, which are the naked pollen of these vegetables, are come to perfection, a moisture is observed on the inner pellicle or stigma. As soon as fecundation has taken place, both sorts of pellicles fade, and at last drop off, as stigmas and anthers do in other plants. The ovarium, on the other hand, from this time swells more and more, and at last ripens into true fruit.—Fecundation takes place on the upper surface of the leaves, while the fruit is perfected on the under. The completion of the first process naturally presupposes the assistance of vessels connecting the stigma with the ovarium; and in truth, we do observe small ones, that cross the substance of the frond from the upper surface, and become pedicles of the ovaries on the under. These pedicles are therefore the real styles of Ferns; and the articulated rings, which surround the ovaries, may be considered as a continuation of them.—Bernhardi made these discoveries in *Polypodium aureum*. L. but he is convinced both that such parts are observable in other species of Ferns, and that they are not to be found in plants in which we know the process of fructification is performed by different organs. *Annals of Botany*, v. i. E.)

Explanation of the Plate belonging to the
FILICES.

- Pl. xiii. FIG. 1. A fruit-bearing head of *Equisetum sylvaticum*, of its natural size, beginning to disperse its seeds.
2. A Capsule-bearing Target, with its fruit-stalk magnified.*
 3. An unripe Seed, with its stamens.
 4. A ripe Seed, with the dust of the Anthers scattered on the filaments.
 5. A Germen, with the Stamens rolled round it in their natural position.
 6. A Seed of *Equisetum palustre*.
 7. A particle from the side of the Stalk of *Ophioglossum vulgare*, whilst very young. (a,) the convex part, bearing both the Stamens and Pistils. (b,) a portion of the skin, with a little of the pulp, from the outer side of the stalk. (c,) the same from the inner side.
 8. Anthers of the same plant simple and compound.
 9. A back view of a leaflet of *Blechnum spicant*, of its natural size.
 10. A particle of the leaf with a single leaflet. (a,) the leaflet. (bb,) Scales. (cc,) membranaceous coverings of the Capsules.
 11. A particle of the same more highly magnified. (a,) the rib, with the Stamens upon it. (bb,) the membrane turned back each way. (cc,) the rudiment of the fruit.
 12. An extremely small leaflet of *Polypodium Filix Fem.* carefully expanded to show the Stamens.
 13. Two of the Stamens taken out.
 14. Leaflets of *Asplenium Trichomanes* from the yet unfolded extremity of the leaf. The Globules supported on foot-stalks are the Stamens, the oblong spots the membrane covering the pistils.
 15. Two of the Stamens taken out.
 16. A particle of the receptacle of the female florets. (a,) the receptacle. (b,) the skin of the leaflet, with its air ducts.

* To prevent repetition, it is always understood that the parts are more or less magnified, unless when the contrary is particularly expressed. The author used a good Compound Microscope, with six magnifying powers.

The Uses of the *Filices* are but little known; few of them are esculent.

They have a disagreeable heavy smell. In large doses they destroy worms, and some of them are purgative. The ashes produced by a slow incineration of the green plants, contain a considerable portion of vegetable alkaly, and in this kingdom are very generally sold under the name of Ash-balls; to make lye for scouring linen.

(Fern beds afford a favourite haunt for deer kept in parks and forests; but are not usually considered as affording food. E.)

In the hot-house Ferns become evergreen, and their beauty is greatly improved in colour and delicacy. The leaves, if cut down when fully grown, and properly dried, make a thatch more durable than that of any kind of straw.

"In most of the Genera of the second subdivision, the seedling plants require a succession of seasons before they produce their fructifications. The first year a single leaf is produced, which seldom attains to more than an inch in height, is thin, semi-transparent, and most commonly, entire. The second year two or three are produced, one larger than the other. The third year, four or five are produced, and the fourth year, more in number proportionable to the richness of the soil and the suitableness of the situation. In moist fertile soils, shaded situations, mossy dripping rocks, or near currents or rills of spring water, the leaves are thin, light, and semi-transparent, larger and more numerous, and apt to become monstrous in shape or size. On dry rocks, and in barren soils exposed to air and sun, the leaves are few, short, firm and opaque, producing seeds in fewer years from the first springing up, and generally retaining their own proper figure." Bolt.

(The foliage and habit of these plants are singularly elegant and beautiful, and in favourable situations they often extend to gigantic dimensions. "Fructifications only of one kind on the same individual. There is, usually, a subterraneous horizontal stem or caudex. Substance varying from membranaceous to coriaceous. In their internal organization Ferns differ remarkably from the rest of the *Acotyledons*; for they have, besides the cellular structure, longitudinal tubes or vessels, as we see in the monocotyledonous stems, and these frequently placed in bundles." Hook. E.)

MUSCI. (Mosses.)*

The female parts of the fructification are intlosed in a Veil, (*calyptra*), which adheres to the top of the ripe capsule, (protecting and covering it in the manner of an extinguisher. E.) Capsule (rarely entire,) opening transversely. Stems leafy. Leaves membranaceous, reticulated, after being dried, reviving when soaked in water.

* (The Seed-lobes of Mosses, according to Hedwig, are above all others numerous and subdivided, as well as most distinct from the proper leaves; so that these plants are very improperly placed among such as have no Cotyledons, a measure originating probably in theory and analogical reasoning rather than observation. Sm. Intro. E.)

Male flowers.

CAL. common, of many leaves. *Leaflets* in structure, resembling those of the plant, but generally broader, sometimes coloured, open and expanding like the rays of a star or the petals of a full blown rose, or else closing and approaching like a bud. Some few Mosses have no appearance of a calyx.

BLOSS. none.

STAM. numerous, within the common calyx, mostly separated by succulent threads or chaff-like substances. Sometimes they unite so as to form a little knob, or are placed in the bosoms of the upper branches. *Filament* short, thread-shaped. *Anthers* sometimes heart or egg-shaped, but mostly cylindrical, one-celled, opening at the top, and discharging granulated pollen.

Female flowers on the same or on different plants, sometimes intermixed with the males.

CAL. *Perichatium* many leaved. *Leaflets* various, generally inclosing several pistils, intermixed with succulent threads.

BLOSS. *Veil* cylindrical or conical, investing the germen and fixed to its top, united at the base to the sheath of the fruit-stalk, but not elsewhere attached.

PIST. *Germen* cylindrical or conical. *Style* slender, standing on the veil. *Summit* lopped.

S. VESS. *Capsule* standing on a fruit-stalk which is sheathed at its base, when unripe crowned by the veil which separates at its base, adhering to the point of the capsule, but falls off when that becomes ripe. The capsule then opens horizontally, the lid separating.

Lid with or without a ring, single; or double, the outer one cartilaginous, sometimes swollen, or else contracted at the base, forming a kind of excrescence called *Apophysis*.

Mouth of the capsule either naked, or closed with an outer fringe (*peristoma*.)

Outer fringe with from four to thirty-two teeth, which are upright or reflexed, straight or twisted, triangular, spear-shaped, or bristle-shaped, acute or blunt.

Inner fringe finer, either closely adhering to the outer, or joined to it by threads from its inner side, or loose and unconnected, or fixed to the pedicle on its little bulb. *Mouth* naked, or covered with a membrane or net-work of the inner fringe, or variously jagged, or closed by distinct and regular teeth. *Column* extending from the base to the point of the capsule, thread-shaped, straight, passing through the lid into the style, and often giving the lid a pointed appearance.

SEEDS numerous, minute, spherical, smooth, or rough.

Such is the general character of the Mosses, which Schreber has deduced from the discoveries and observations of Hedwig, but we shall now introduce some more particular remarks from Hedwig himself.

Hedwig defines Mosses, as vegetables, in which the female parts of fructification are furnished with a veil-like petal, bearing a style. He divides them into two Orders:

1. *Capsule* either entire, lidded, and opening transversely: *Frondosi*.
2. *Capsule* with four valves, opening lengthwise: *Hepatici*.

These definitions exclude the *Lycopodia* from amongst the Mosses. Perhaps they might rank with *Osmunda*; but their fructification has not yet been sufficiently examined. The *Musci Hepatici* are now formed into an assemblage of themselves, separate from the proper Mosses. See the fourth Order.

Observations on the proper Mosses, or Musci of Linnæus.

If we except *Bryum pomiforme*, *B. subulatum* of Haller, *B. trichodes*, and a few non-descript species, the Mosses bear the stamens and pistils in separate flowers either on the same, or on distinct plants.

The time of flowering generally coincides with that of the fruit attaining maturity, as happens in other evergreen perennials. Thus, in *Polytrichum urnigerum*, *Mnium fontanum*, *hornum*, *punctatum*, *undulatum*; *Bryum trichodes*, *cæspitium*, &c. the veils fall off early in the spring, and the seed is scattered abroad; whilst at the same time the less obvious unimpregnated germens, and the male or stameniferous flowers are performing their respective functions. This circumstance has caused these ripe capsules to be mistaken for antlers, and the seeds for the pollen.

CALYX, OR PERICHÆTIUM.

Both the Male and Female flowers are furnished with an Involucrum, which gives the outward figure to the flower. This Involucrum in Mosses has attained the appropriate name of *Perichætiûm*. It varies more in the male than in the female flowers; and, is more to be attended to. The radiated disks of the *Polytricha* and the *Mnia*, are very remarkable, and the scales composing them differ in many respects from the other leaves of the plant. The heads which put forth at the extremities of the *Brya* have been hitherto unnoticed, though they contain the parts of fructification, and are composed of leaflets or scales, different both in shape and size from the stem-leaves. Thus, in *Bryum rurale*, they are not terminated by hairs, and are shorter than the stem-leaves; in *Br. peluceus*, *scoparium*, *heteromallum*, *aciculare*, &c. they are broader than the other leaves, and more hollow at the base. Where the disk-like substances form a kind of bud, as in almost all the *Hypna*, *Bryum extinctorium*, *subulatum*, *pulvinatum*, *hypnoideum*, &c. they are much smaller than the leaves; they are also concave, egg, or spoon-shaped, and destitute of the hairs which fringe the real leaves of the plant. These, therefore, are truly the calyx, and as they include the florets with stamens only, we call them the *Perichætia* of the Male florets.

Upon an accurate inspection of the Mosses which bear capsules towards their extremities, i. e. Female flowers, we observe that the leaves adjoining to the fruit-stalk are much more beautiful than those on the stems. But sometimes the inner leaves become gradually smaller, and those nearest to the flowers so very minute, that without a microscope it is not possible to dissect them away so as to expose the flower. Thus pl. xiv. f. 19. exhibits a plant of *Bryum pyriforme*, (a) contains the male, (b) the female flower; f. 20. shows the female flower laid bare to the last conspicuous leaf, within which the flower lies hidden, but this being removed, other still smaller scales come into view, f. 21.

These, therefore, are to be considered as the Involucrum of the Female flowers, surrounding and embracing the germen. These Involucrum, like those in many other well known plants, often grow larger as the capsule advances to maturity. Pl. xiv. f. 17. A small plant of *Bryum extincorium*, with the lower leaves taken away, to show the bud-like calyx of the Male floret, (a).

f. 18. A plant of *Bryum pulvinatum*, with the leaves removed to show the flowering buds, (a) the Male, (b) the Female flower.

f. 19. A Female and a Male plant of *Bryum pyriforme*.

f. 20. The Female floret inclosed within its innermost leaves.

f. 21. The same, with all but one of its leaves removed.

Male, or stamiferous flowers.

The Anthers are almost universally cylindrical, and either straight or crooked, but in *Sphagnum palustre* and *Mnium androgynum*, they are egg-shaped and more or less tapering to a point. Their colour is a very dilute green, almost white. When viewed under the highest magnifiers, and strongly illuminated by reflected light, they are found to contain a granulated substance: but their tops are extremely pellucid, and this pellucid part expands into a rising vesicle, at the time the pollen is about to be discharged, as at (c) p. xiv. f. 22. The top then opens, and the pollen is ejected, the space from which it issues becoming more transparent. This pollen, when evacuated, seems to explode in the drop of water, in which these observations ought to be made. See f. 23.

Besides the Anthers, included within the same Involucrum, we find some very delicate succulent bodies, of various shapes. In *Hylocomium commune* they are club-shaped, but tapering to a point; in *Mnium fontanum*, and *palustre*, *Bryum rurale* and *undulatum*, they are jointed and bluntish. In *Bryum hornum* the last joint is acute. In *Mnium selpyllifolium*, *punctatum*, *cuspidatum*, and *Bryum pyriforme*, they have a jointed stem terminated by a globule. f. 24. In *Mnium hygrometricum* they have different shapes in the same floret; in some they are thread-shaped, and more or less pointed; in *Sphagnum palustre* they encircle the anther. Sometimes they are much longer than the anthers, as in *Bryum pellucidum* and *pyriforme*; at other times shorter, as in *Buxbaumia sessilis*, and *Bryum pulvinatum*.

We must add, respecting the shape of these barren florets, that in the *Polytricha* and *Mnia* some are like disks, others like roses, and some like stars, when in a fully expanded state. In the stellated *Polytrichums*, the scales are placed in concentric circles. In *Mnium hornum*, *palustre*, *fontanum*, &c. they are more like a rose or disk. After the pollen is dispersed, these roses or stars become more expanded, but previous thereto, they are generally so open as to admit a view of the parts they contain. In some Mosses the flowers terminate the branches, as in *Mnium pyriforme*, and *purpureum*; *Bryum pellucidum*, *aciculare*, *scoparium*, *helcromallum*, *viridulum*, *simplex*, &c. in such, though a little open, they are not enough so to allow a view of the anthers, until the flowering be past. Some florets are like buds, and sessile in the bosom of the leaves, and others in the tiled and thickened termination of the branches, as in *Sphagnum*.

Two stamens of *Bryum extingtorium*, (c) one ready to burst, (d) one throwing out its pollen, (e e e) succulent vessels. Pl. xiv. f. 22.

f. 23. An Anther of *Bryum truncatulum* viewed in the Solar Microscope whilst it throws out its pollen.

f. 24. An Anther of *Bryum pyriforme*, with (a a) the succulent vessels.

Female flowers.

These are furnished with the usual female organs, viz. a Germen, a Style, and a Summit, pl. xiv. fig. 25; but being accompanied by other substances much resembling them, they are difficult to be distinguished until the germen begins to swell, in consequence of its impregnation. These substances, till better understood, may be called *succulent pistils*; see fig. 26. They are so like the real pistils, that one might readily believe nature had formed the flowers with many pistils, in order that some might have the better chance of impregnation. But several circumstances refute this supposition. Probably they may be intended to supply the flowers with moisture in dry weather.*

The rudiment of the fruit, or pistil of *Buxbaumia sessilis*. Pl. xiv. f. 25.

f. 26. A female flower of *Bryum extingtorium*, with the succulent pistils.

Of the Capsule, and the Calyptra or Veil.

The pistils, after impregnation, daily growing larger, and rising upwards, show the part well known by the name of *Calyptra* or Veil. It may be considered as a kind of petal, (or, as some have imagined, a *corolla*; E.) which is perforated at the top by the style of the pistil. This style is sometimes permanent, falling off with the veil; but where it is not so, the remains of it are always to be found.

* These substances may aptly be compared to the florets with superfluous pistils in the order *Polygamia superflua* of the Class Syngenesia, or to the barren florets in the Umbelliferous plants of the Pentandria Class; and their uses may probably be the same, whatever those uses may be.

- f. 27. A Capsule of *Bryum pulvinatum* with a part of the fruit-stalk. The Veil being thrown off, the Ring and the *Peristoma*, or Fringe, become visible.
 f. 28. The Ring when separated and expanded.
 f. 29. The Veil.
 f. 29.* The Veil of *Jungermannia pusilla*.

Of the Capsule or Seed-vessel.

From what has been alledged, it is evident that what Linnæus denominated Anthers, are really Seed-vessels, and by sowing the seeds which they contain, I have repeatedly procured a crop of young plants, in all respects similar to to their parents.

The Capsules of Mosses are always supported upon a fruit-stalk, though sometimes it is very short; and excepting only in *Sphagnum palustre*, this fruit-stalk is sheathed and conical at its base. The Capsules vary in shape, size, and consistence. Some species have an elastic ring between the capsule and the veil, p. xiv. f. 28. which, when the seed is ripe, throws off the veil with more or less force. The Veil, f. 29, being thrown off, we find certain fringe-like processes or projections, f. 27. (a) varying greatly in size, shape, structure, number, and disposition. They surround the opening of the capsule in a single or double, rarely in a triple, series. These substances we may call the † *Peristoma*, or Fringe. The use of this *Peristoma*, or Fringe, seems to be to defend the seeds from injury in wet weather. In dry weather it expands and leaves the mouth of the capsule open, but upon the least moisture, even that of one's breath, it closes again.

Seeds.‡

The seeds of Mosses are spherical, generally smooth, sometimes dotted as in *Bryum extinctorium*, sometimes prickly, as in *Bryum pyriforme*, or *heteromallum*. They are brown, yellow, or greenish. Hedw.

USES.—Mosses thrive best in barren places. Most of them love cold and moisture. Trifling and insignificant as many people think them, their uses are by no means inconsiderable. They protect the more tender plants when they first begin to expand in the spring, as the experience of the gardener can testify, which teaches him to cover with moss the soil and pots which contain his tenderest exotics; for it equally defends the roots against the scorching sun-beams and the severity of frost. In spring, when the sun has considerable power in the day time, and the frosts at night are severe, the roots of

† On the varying structure of the *Peristoma*, and the figure and disposition of the barren florets, the author proposes to establish the Genera of Mosses.

‡ (Besides the means of increase by seed, some of the *Jungermannia*, like most other of the Cryptogamia, possess the property of propagating their kind by *gemma*, in the same way as do many species of *Allium*, *Polygonum viviparum*, &c. among the Phanogamous plants. Hook. E.)

young trees and shrubs are liable to be thrown out of the ground, particularly in light spongy soils. But if they are covered with moss, this accident never can happen. Those who are fond of raising trees from seeds, will find their interest in attending to this remark.

Mosses retain moisture a long time without being disposed to putrify.

The angler takes advantage of this circumstance to preserve his worms, and the gardener to keep moist the roots of such plants as are to be transported to any considerable distance.

It is a vulgar error to suppose that Mosses impoverish land. It is true they grow upon poor land which can support nothing else; but their roots penetrate very little, in general scarcely a quarter of an inch into the earth. Take away the Moss, and instead of more grass, you will have less; but manure and drain the land, the grass will increase and the Moss disappear.

Sphagnum palustre, *Mnium triquetrum*, *Bryum paludosum* and *æstivum*, *Hyppium aduncum*, *scorpioides*, *riparium*, and *cuspidatum*, grow upon the sides and shallower parts of pools and marshes; and in process of time, occupying the space heretofore filled with water, are in their half decaying state, dug up and used as fuel, under the name of Peat. These marshes, drained partly by human industry, and partly by the long continued operations of vegetables, become at length convertible into fertile meadows.

Very few Mosses are eaten by cattle. The Bishop Moth, and the Brussels-Lace Moth feed upon some of them. (They afford protection to numerous insects, and the best materials for the nests of birds. F.) Their medicinal virtues are but little known, and less attended to. I think it probable, that on account of their astringent properties, some of them might be worth trying as a substitute for oak bark in tanning leather.

(So congenial is the humid atmosphere of Ireland to this tribe of plants, that the Emerald Isle has been designated the paradise of Mosses.

Like many other Cryptogamies," Dr. Drummond observes, "they are extremely tenacious of life, and though rendered as dry as chaff, will, when again moistened, resume their functions and freshness of appearance as before. In cold countries they may protect trees from the cutting north wind, for it is remarked that they grow chiefly on the northern side of the trunk and branches, and this forms one of the marks by which the Canadian savage traces his way through the pathless forests."

* See an elegant and interesting volume, by that author, entitled, "First Steps to Botany."

H E P A T I C Æ.

(Frondose, creeping, many-rooted plants inhabiting damp places, of a simple cellular texture, as humble in their mode of growth as the true Mosses. E.)

Female fructifications inclosed in a veil, which splits open at the top, and discharges the capsule.

CAPSULE opening lengthwise, filled with seeds.

SEEDS numerous, fixed to an elastic cord, formed of one or two spiral threads.

Some plants are referred to this subdivision on account of their agreement in general habit, though the female fructification has no veil, but is placed upon, or immersed in, the substance of the frond.

The fronds are mostly lobed, exhibiting a network of vesicles, and though dried, reviving again when moistened with water.

Hedwig observes that all the female florets have a double calyx, or a Cup, and a Blossom. In shape and structure, he describes them as greatly resembling the proper Mosses, but he never found the succulent thread; the Pistil-like substances are however observable, accompanying both the germen and the ripened capsule; but not in all the species.

The Capsule, like those of the preceding Mosses, is inclosed in a Veil, to which the style adheres; but this Veil is not, as in them, loosened at its attachment and raised along with the growing Capsule; it tears open in two, three, or four places, and has therefore been sometimes considered as a petal.

All these Moss-like plants agree in ripening their fruit, which is raised upon an elongated fruit-stalk, and opens into four Valves, filled with the seeds, attached to elastic cords. These seeds re-produce their respective plants.

JUNGERMANNIA nemorosa. It bears its male, or barren flowers, which are of a reddish brown colour, at the summit or extremity of the Stem in one plant, and its female florets at the extremity of another plant.

Pl. xiv. f. 30. A male plant of its natural size.

f. 31. The flowering summit of the male plant.

f. 33. The germen of the female plant, with its pistil, and three pistil-like bodies at its base, taken from the calyx leaves at the top of the plant.

JUNGERMANNIA asplenoides. The extremity of the male plant forms a beautiful tiled, two-rowed Involucrum of leaflets, very concave at the base, within each of which are found two or three stamens of a milky colour.

The female flowers are on a distinct plant, included also in a leafy calyx or perichætium at the top of the plant.

f. 35. A male plant of its natural size.

- f. 36. The tiled leaves at the extremity of the plant, which includes the anthers.
- f. 37. An anther taken out of the Perichætium or leafy calyx.
- f. 38. An anther open at the end, after shedding its pollen.
- f. 39. A female plant of its natural size.
- f. 40. The germen with its style and accompanying pistil-like vessels, taken out of its Perichætium at the extremity of the plant.
- f. 41. The Seeds, with the elastic thread to which they are attached.

JUNGERMANNIA pusilla. The stamens very much resemble those of *Sphagnum palustre*; they are placed upon the Stem, in the bosom of the leaves; their colour greenish, changing to yellow. The female flower is found towards the top of the same plant, in a Perichætium, but by the growth of the plant during the ripening of the Capsules, they are at length observable about its middle.

- f. 42. The plant of its natural size.
- Pl. xv. f. 43. The same magnified, to show the four stamens at its base, and the female flower at its summit.
- Pl. xiv. f. 44. A stamen more highly magnified.
- f. 45. The germen and style taken out of its perichætium.
- f. 29.* The Veil separated from the ripened capsule.
- f. 46. A Seed, with its elastic thread.

JUNGERMANNIA palmata. The flowers with stamens are found at the extremities of the branches; after flowering, they fall off, and give the branch the appearance of having been lopped. The female flower is generally at the base of the branches, but sometimes also at their sides, on a distinct plant.

- Pl. xiv. f. 47. A male or barren plant of the natural size.
- Pl. xv. f. 48. The same magnified, to show the barren florets (*a a*), (*c*) one of them open at the end.
- Pl. xiv. f. 49. Two stamens separated.
- f. 50. A fertile or female plant of the same species magnified, with the Capsule open, its valves turned back, and the elastic threads at its extremity.
- f. 51. The elastic thread, with the seeds.

JUNGERMANNIA furcata. The male flowers of this are found concealed in the substance of its trunk: the female ones are on the same plant, and possess nearly a similar situation.

- Pl. xv. f. 52. The plant of the natural size.
- f. 53. A small portion of it highly magnified, to show the two male florets (*a a*), and the female floret (*b*).
- f. 54. A male floret further magnified.
- f. 55. A Stamen separated.
- f. 56. The Perichætium of the female floret cut through lengthwise.
- f. 57. The right Capsule open, and the Seeds adhering to the elastic threads.

JUNGERMANNIA epiphylla. The male florets form protuberances on the upper surface of the leaves. The female florets are formed at the extremity of the leaf, but as they ripen, the growth of the leaf continuing, they ultimately appear on its disk. Want of attention to this circumstance has given rise to errors respecting the species of these plants.

- f. 58. The plant somewhat magnified to show more distinctly the dots of male florets, and the female floret concealed under its scaly calyx at the end of the leaf, at (d).
- f. 59. The female floret taken out of its calyx.

MARCHANTIA polymorpha. Early in the spring we find upon this plant certain glass-shaped cups, containing lentil-shaped substances; these are perfect young plants either formed at once from the parent plant, or growing from seeds deposited thereon. Soon after we may observe some entire targets formed; and as these rise upon their foot-stalks, on other plants, either on the same or on a different tuft, stellated targets appear, which grow taller than the entire ones. The entire targets when cut through, vertically, are found to contain the stamens; surrounded by their succulent vessels. The stellated targets contain the germens, two or three of which are found under each of the rays, invested with its membrane, out of which the pistil projects previous to the impregnation of the germen. These germens do not ripen all at the same time. In a favourable situation this plant flowers again in July. From what has been said, it is evident that in this species the male and female florets are to be sought for on distinct plants.

- Pl. xv. f. 60. A target of male flowers cut perpendicularly down through the foot-stalk.
- f. 61. A follicle of stamens taken out and more magnified, to show its surrounding ring.
- f. 62. A Germen, with its projecting style.
- f. 63. A Capsule, with its three succulent fibres.
- f. 64. An elastic Cord taken out of the ripe Capsule, with one of the seeds.

MARCHANTIA conica. The male flowers are sessile; in every other respect they so exactly resemble those of the preceding species, as to render any further description of them unnecessary; but the female flowers have a singular structure in respect to the pistils. At the time the stamens attain perfection, the conical assemblage of female flowers displays within their proper membranes as many pointed styles as there are germens. On account of their tender structure, it is very difficult to examine them; but, when nicely dissected, the style appears to project from the base of the germen, and to bend upwards towards its point. The capsule is furnished with a veil, which does not fall off, but bursts by the expansion of the capsule, which at length, when quite ripe, opens with four valves, which roll back.

- Pl. xv. f. 65. A Disk of male florets cut down perpendicularly.

- f. 66. Six female flowers taken from the common fruit-stalk, with the six styles bent back.
- f. 67. A ripe Capsule opened by the rolling back of the Valves (*h*.) showing the seeds fixed to the elastic Cords (*i*.)

ANTHOCEROS lavis. The stamens, covered by the outer skin of the leaf, form spots of a yellowish green colour, and somewhat raised. As they approach to maturity the skin bursts and contracts into an oval shape, forming a kind of calyx. Each of these spots contains three or more follicles of Stamens, of a reddish yellow colour.—Each Stamen is furnished with its filament, and surrounded by a jointed succulent vessel. At the same time the female flower assumes an elevated conical figure, supporting a veil on its extremity, furnished with a very short Style. When ripe, it changes to a dark brown colour, divides into two valves, scattering its seeds with an explosive power.

A. punctatum resembles this species in its parts of fructification.

Pl. xiv. f. 68. A part of the leaf magnified, to show one female, and four male florets.

Pl. xv. f. 69. Two of the Stamens taken out of the male floret.

f. 70. A perpendicular section, to show the Capsule just emerging from its sheaths, and supporting its veil.

Pl. xvi. f. 71. The ripe Capsule opened, with the columnar receptacle, and a few remaining seeds.

f. 72. A ripe Seed, prickly, and its elastic membrane.

BLASIA pusilla. It flowers in the beginning of May; at which time the leaf is narrow, and the stamens appear very near to its rib; but as the membranaceous parts expand with the growth of the leaf, they at length appear at a distance from the rib. The anthers are yellowish, rather protuberating, inclosed in a follicle, from which they are with difficulty extracted. Towards the end of the plant we discover the pistil, with its summit sessile on the rudiment of the fruit, but it is very fugacious. As the fruit ripens, the place before occupied by the style appears as a tube, not unlike the conical horn of *Anthoceros*. The capsule now becomes more heart-shaped, and its narrow point inclines towards the root of the plant. At length the globular seeds in its cavity become visible, and, when ripe, are pushed out of the mouth of the tube, either by their own expansion, or by the contraction of the capsule, and adhering there, have an appearance like the male floret of *Minium androgynum*.

f. 73. The plant magnified, to show the dots of the male florets, and the two female florets.

Pl. xvi. f. 74. A Stamen taken out of a male floret.

f. 75. An unripe Capsule divided perpendicularly to show the seeds.

RICCIA glauca. The leaf has no rib, but seems composed of vessels equally dispersed. When magnified, it appears covered with tubercles, and amongst these we observe distinct shining globules. One of these

globules, when nicely dissected, and exposed to the highest magnifying power, in a drop of water, appears of a granulated texture. I consider those as the anthers, for nothing else appears like them. The female flower lies imbedded in the substance of the plant, where it ripens its fruit. They who reflect how small a part of a body is dedicated to the purposes of generation, in comparison of its whole bulk, will conceive the difficulty of observing the very minute pistil of this plant, buried as it is in the substance of the plant, its summit only opening on the surface. As the capsule swells, it becomes more apparent, and by a perpendicular section through the substance of the leaf, we discover the style of a beautiful brown colour, ascending from the capsule to its surface. The seeds are at first white, afterwards greenish, but nearly transparent, and surrounded with a pellucid white border. The capsules, when ripe, open on the surface of the plant, forming a black spot, visible to the naked eye. They are generally observable towards the base of the leaf.

- f. 76. The plant of its natural size.
- f. 77. Part of the same magnified, to show the more superficial spots containing the stamens, and the deeper seated female flowers (*a a*).
- f. 78. A follicle of anthers separated, and highly magnified.
- f. 79. A perpendicular section through the substance of the plant, to show the ripening capsules, and their styles rising up to the surface of the leaf.
- f. 80. A Capsule taken out, together with its style.

ALGÆ.

The plants comprised under this division, scarcely admit of a distinction of root, stem, and leaf; much less are we enabled to describe the parts of the flowers. The Genera, therefore, are distinguished by the situation of what we suppose to be the flowers or seeds, or by the resemblance of the whole plant to some other substance with which we are well acquainted. Pl. 1. E. and F. represent *Lichens*, and C. a *Fucus*.

The female fructifications are either to be found in saucers or tubercles, as in *Lichens*; in hollow bladders, as in *Fucus*, or dispersed through the substance of the plant, as in *Ulva*.

The substance of these frondose plants varies much; it is flesh-like, or leather-like; membranous, or fibrous; gelatinous, or horn-like; (in some instances herbaceous, almost leafy; *A*) or resembling calcareous earth.

Some of them possess irritability, or an appearance of sensation. (Excluding the *Lichens*, (now elevated to the rank of a distinct Order, comprising numerous genera,*) and referring chiefly to the sub-

* (The systematic arrangement of *Atharius* promulgated in his "Prodromus," and "*Methus Lichenum*," wherein this perplexing tribe of plants is formed into many separate genera, founded on the receptacle of the seeds, surpasses every other attempt to illustrate the subject, and will probably be adopted by all professed Cytogamists. E.)

marines, Professor Hooker remarks: "many species of this singular, and, generally speaking, beautiful order of plants, frequently float in the water without any point of attachment to extraneous substances. They are mostly sub-pellucid, and the cellules are often elongated and united so as to form fibres interrupted by transverse dissepiments. Their colour is various, often green, brown, red, &c. After having been kept dry for a great length of time, they will revive by immersion in water, but that portion of the plant only imbibes the fluid which is immersed in it."

The lynx-eyed observer will be amply gratified by the investigation of these *penetralia* of the Temple of Nature; for therein are concealed mysteries worthy of being explored, and organic structures truly miraculous; as though objects imperceptible to a cursory view, were destined to reward the persevering investigator, by exciting sentiments of admiration hitherto bestowed only on the stately Cedar or the towering Palm. F.)

Hedwig has done less to elucidate this Order than those of which we have already spoken; but shapeless and unorganized as some of the Lichens seem to be, his genius, aided by indefatigable industry, has explored the heretofore latent secrets of their fructification, as will appear from the following account of

LICHEN ciliaris. The fringes from the extremities destined to take root, and the downy matter on the surface, have nothing to do with the real parts of fructification. These are to be found in the concave saucers, or convex targets or warts, either on the same, or on a different plant. They both arise from a kind of knot on the under surface of the plant. The warts change to a brown, and afterwards to a black colour at the top; but before they become brown, a perpendicular section through one of them, discovers a single or double cell buried in the tender pulp of the plant, and filled with a granulated substance. Whenever the top of this wart or tubercle turns black, the granulated mass has then escaped through it, and only a kind of jelly remains in the cells; which, however, soon vanishes, whilst the whole tubercle becomes black and hard. This process is performed in a short time.

The rising particle, which is destined to form a concave saucer, becomes hollow and green at the top, through which, if we make a perpendicular section, we find fibres radiating from its centre, and forming a semi-circle, bounded by a more opaque line. As this continues growing, the saucer becomes larger, and more and more open. Its cavity is at first reddish, gradually becoming darker. At length it becomes a perfect saucer, either sessile, or supported on a short pedicle; its border scalloped or entire, black within when moist, and greyish when dry.

On cutting the saucer through, and examining a vertical section of it in a little water, we shall find immediately under the black crust at the top, the seeds disposed in straight perpendicular columns. When very highly magnified, these seeds appear egg-shaped, but marked with distinct groove transversely. No unprejudiced person can therefore

doubt that the warts with the black tops are the male, and the saucers the female flowers.

The saucers, in all the species of Lichens, resemble the above in the mode of flowering, and in a like disposition of their fruit. The male flowers are also similar, whether contained, as those of *L. ciliaris*, in the substance of the plants or, as in others, on its surface. In some species, as in *L. physodes*, they are found on the extremities of the branches; in others on the edges, as in *L. farinaceus*, and *fraxineus*; in others again on the under surface, as in *L. pulmonarius*, *apthosus*, &c. where they sometimes form circles somewhat resembling saucers, as in *L. stellaris*.

Pl. xvi. f. 81. Part of the plant magnified to show (o o o) the male, and (m) the female flower, (n n) the fringes which strike root; some of them expanding at the end.

f. 82. The section of a stamiferous flower cut through perpendicularly.

f. 83. The section of an unopened flower.

f. 84. Section of a flower, with the ripe seeds.

f. 85. Ripe seeds taken out.

LICHEN *physodes*.

f. 86. The male, or barren plant, of its natural size.

f. 87. Its stamiferous extremity highly magnified.

Uses.—Some of the *Fuci* are used as food, and all of them, as well as the *Conferæ*, afford a manure, of the greatest importance to farmers on the sea coast.

The Lichens, though generally looked upon as unworthy of notice, are of great consequence in the economy of nature. The crustaceous kinds fix upon the barest rocks, and are nourished by such slender supplies as the air and the rains afford them. When these die, they are converted into a very fine earth, in which the dried Lichens find nourishment, and in their decaying, and falling to dust, various Mosses, as the *Bryum*, *Hypnum*, &c. occupy their place: (Insignificant, therefore, as these tribes may appear, they prove that means, small and simple, may accomplish the greatest ends. Lichens and Mosses, (especially in the colder latitudes,) thus constitute the very matrix of vegetation; by successive deposits, *stratum superstratum*, providing beds capable of sustaining the seeds of more perfect plants, (conveyed by various fortuitous circumstances,) till verdure and flowers succeed to sterility, and are themselves not unfrequently crowned by the lofty Pine or the knotted Oak.

“ With such a liberal hand has Nature flung
The seeds abroad; blown them about in winds
Innumerable; mix'd them with the nursing mould,
The moistening current, and prolific rain.” (E.)

Many of the Lichens supply a grateful food to goats, and the rein-deer, which constitutes the whole economy of the Laplanders, and supports many thousand inhabitants, lives upon one of the species.

Several species afford colours for dyeing.* One of them, brought from the Canary Islands, viz. the Orchel, or Argol, furnishes a very considerable article of traffic. It is not improbable, that some of the species growing in our own island, may yield very beautiful and useful pigments; but this matter has not been sufficiently examined. Mr. Hellet gives us the following process for discovering whether any of these plants will give a red or purple colour. "Put about a quarter of an ounce of the plant in question into a small glass, moisten it well with equal parts of strong lime water, and spirit of Sal Ammoniac; or the spirit of Sal Ammoniac made with quick lime will answer the purpose, without lime water. Tie a wet bladder close over the top of the vessel, and let it stand three or four days. If any colour is likely to be obtained, the small quantity of liquor you will find in the glass will be of a deep crimson; and the plant will retain the same colour when the liquor is all dried up. If neither the liquor nor the plant have taken any colour, it is needless to make further trials."

FUNGI.

This Order consists of plants (either parasitical, or springing from the ground naked, or inclosed in a splitting *Folva*. Substance† in some corky, or toughly coated; in others softer, fleshy, or mucilaginous. Some are simple, others branched; some spherical; several have a head, *Pileus*, either stalked or sessile, sometimes orbicular and pedate, sometimes semi-orbicular, and laterally attached: all destitute of either leaves, or flowers. The corky *Fungi* are perennial, and often parasitical; the others either parasitical or terrestrial, short-lived, prone to putrefaction: Juss. E.) bearing their seeds either in gills or tubes, or attached to fibres, or to a spongy substance. As we know but little of their fructification, the Generic characters are taken from their external form, or from the disposition of their seeds. An *Agaric* is represented in pl. 1. at II, to show (a) the Ring; (b) the Stem; (c) the *Pileus*.

The following are the principal discoveries of Hedwig on the subject of Fungi.

AGARICUS (Amanita) arborea mollis, coloris exacte crocci, Dill. Giss. p. 182.

On dividing a plant of this species longitudinally through the middle, before the curtain had begun to separate from the edge of the *Pileus*, the whole inner surface appeared white; but whilst my attention had been arrested by some still whiter lines observable in the flesh of the *Pileus* and of the stem, the upper and inner surface of the curtain changed to a violet, and in a short time to a brownish colour. On nicely raising a small portion of this surface, and viewing it under

* (Nor is this obscure tribe wholly destitute of medicinal virtues, particularly in Consumptive cases; see *L. Islandicus, pulmonarius*, &c. E.)

† General structure floccose, (minutely filamentous.) Grev. E.)

high magnifiers, I discovered pellucid succulent vessels, and innumerable oval globules connected therewith, of a dilute brown colour. The part from which this portion had been taken away did not change colour again.

I next examined a portion taken from one of the gills, whilst it was yet white. It was divisible, though not readily, into two laminae. The lower edge was thickly set with tender cylindrical substances, some of which had a globule at their extremities, but others not. The gill itself appeared of a reticulated structure, with larger and more distinct spots, a little raised.

In an older plant of the same species, wherein the curtain was torn, the pileus almost fully expanded, and the gills turned yellow, the upper part of the stem began to be tinged by a brown powder shed from the gills. It was evident, on examination, that this brown powder was the seeds, and that it proceeded from the larger spots before observed in the gill, the two laminae of which now readily separated.

Pl. xvi. f. 88. A view of the plant cut down lengthwise.

f. 89. Strings of the Stannens very much magnified.

f. 90. A portion of the Gill, to show the unripe seeds.

f. 91. The ripe seeds.

We have therefore reason to believe that the stannens are the globules attached to the threads found within the curtain. After these vanish, the plant continues to grow until it scatters its seeds; (*Fungi* are propagated by seeds, and increased by fibrous radicles; E.) and then it dies.

We learn from these observations, that the full expansion of the pileus indicates the maturity of the seeds, and that the fructification is performed previous to the rupture of the curtain.

On examining the curtains and the rings of different *Agarics* and *Boleti*, I have always found the above-mentioned globules on their upper or inner surface. In some of the yellow *Agarics* they are so numerous on the upper surface, as to stain the fingers when touched, but the under side is smooth, and entirely destitute of them. Some few *Agarics* seem to have only a row of these threads beset with globules at the edge of the Pileus, whilst it is in contact with the stem, and upon this expansion they shrivel and drop off.

It is true that in many *Agarics* we neither find curtain nor ring, nor these threads at the edge of the pileus; but when this is the case, the threads are placed upon the stem, and may readily be found by examining the plant in its very young state, before the edge of the pileus separates from the stem. This structure takes place in many of the *Agarics*, in *Hydnum imbricatum*, and the *Boleti*, which are rarely furnished with a curtain. After the pileus in these is expanded, and the stem grown longer, its upper part, where the stannens were seated, becomes reticulated. The seeds of the *Boleti* are found within the membrane that lines the tubes.

The stemless *Agarics* and *Boleti* present similar appearances about the edge, and at the base. I have also found something of the same kind in *Peziza cynthoides*, whose seeds appear to be inclosed in a kind

of pod ; and likewise in one or more of the Lycoperdons ; but these have not yet been sufficiently examined.

Whether the succulent vessels in the margin, fig. 90, or the surface of the gills, or the mouths of the tubes be, or be not, styles and summits ; or whether they are designed for any other purpose, is not determined.

It is, however, sufficiently evident, that the Agarics, and the Boleti, are vegetables,* and that they bear their stamens and pistils on the same plant.

For the practical purposes of investigation, it is therefore obvious, that the minutiae of the fructification can avail us but little.

The Agarics and the Boleti, numerous and beautiful tribes of plants, (many species of which are esculent, some highly deleterious ; while the impalpable powders evolved by others promise useful pigments ; E.)† are now arranged in a Method which the author hopes will be found sufficient to obviate the principal difficulties which have attended the study of them, and to render the investigation of the species, at least as easy as any other part of the system. He therefore requests the attention of the reader to the following explanation of the principles on which they are arranged, referring him, for the preservation of specimens, to what has already been said at pages 31 and 32.

AGARICS are composed of a Cap, or *Pileus*, with Gills underneath, and have either Stems or no Stems.

The Stems are either central or lateral : hence arise three primary divisions of the Genus, already in use, and adopted by Linnaeus.

A. Stems central.

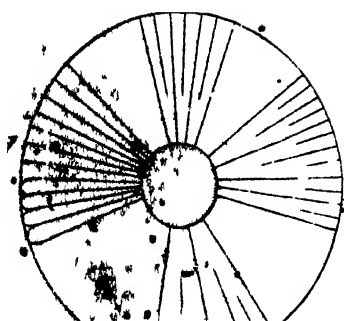
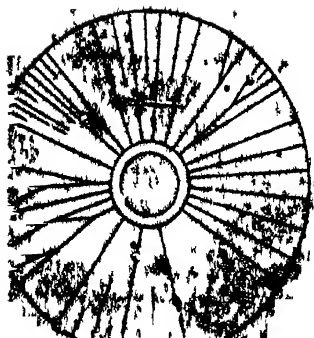
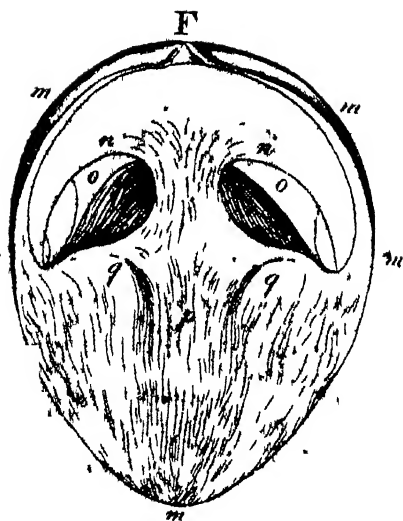
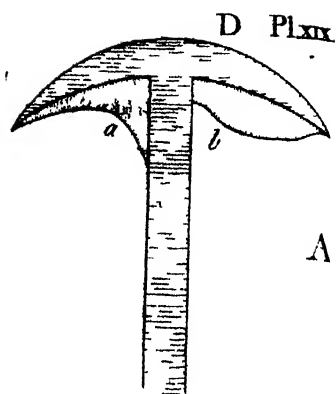
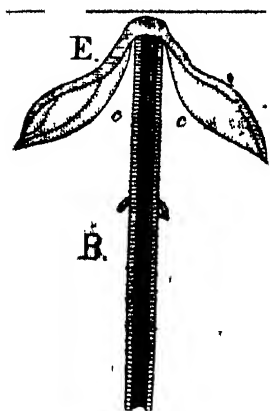
B. Stems lateral.

C. Stemless.

They have also a Root, more or less obvious, and some of them, in a yet unfolded state, are wholly enclosed in a membranous or leather-like case, called a Wrapper. Some of them have a Curtain, or thin membrane, extending from the stem to the edge of the pileus ; this curtain tears as the pileus expands, and soon vanishes ; but the part attached to the stem often remains, forming a ring round it. This Ring is more, or less permanent, as its substance is more or less tender, but some of the species appear some years with, and other years with-

* (Strange as it may appear, by some naturalists they have been considered of an animal nature ; chiefly, as Sir J. E. Smith observes, because of their fetid scent in decay, and because little white bodies like eggs are found in them at that period. But these are truly the eggs of flies, laid there by the parent insect, and destined to produce a brood of maggots, to feed on the decaying fungus, as on a dead carcase. As reasonably might we infer an animal nature in the *Scapula*, which exhales so cadaverous an odour while yet in perfection, as actually to attract the flesh-fly. E.)

† (Nor may the acrid juices of these plants prove unworthy the attention of the chemist. E.)



out a Ring,* so that though it forms a very obvious character, it cannot be admitted as a ground of specific distinction.

Pl. 19. fig. (F.) (copied from Bulliard,) shows a vertical section of an Agaric of the more complete kind, in its egg-state, in order to demonstrate all the parts mentioned above.—(m m m m) the Wrapper.—(n n) the Pileus.—(o o) the Gill.—(p) the Stem before it shoots up.—(q q) the Curtain. On the section of a Stem at (B) may be seen the remains of a Curtain, then called a Ring. The curtain and the Ring must be rejected in forming characters of Agarics, for the reason just now mentioned, and the Wrapper is not easily accessible, nor is it very often found, so that it does not afford much aid in the discrimination of the species. The Curtain and its remnant, the Ring, are common to all our secondary subdivisions of Agarics with central Stems, but the Wrapper seems to be confined to the plants with solid stems only; nor has it been observed attendant even upon those when the Gills are decurrent.

The Stem of an Agaric is either solid, or hollow. The solid Stem is represented at (A) the hollow Stem at (B) When an Agaric is to be examined, cut the stem across about the middle, with a sharp knife, and it will immediately appear whether it be solid or hollow. Let it be remarked, however, that the solid Stem varies much in degree; it may be as solid as the flesh of an apple, or as spongy as the pith of an elder stick, or a sun-flower stalk, but still it is solid, i. e. there is no regular hollow pervading its whole length; though the more spongy and larger Stems sometimes show irregular and partial hollow places from the shrinking of the pithy substance when the plant grows old, but this can never be mistaken for a regular, uniform, and original hollowness. (B) represents a hollow Stem. The width of this hollow part varies much in different species, and is by no means always proportioned to the size of the Stem: though it is uniform and regular throughout its whole length, except perhaps at the bottom, where it changes to a root. This hollow is sometimes entirely empty, sometimes loosely filled with a pithy substance, but its regularity is not affected by that circumstance. Next to the Gills, the Stem of an Agaric is the part least liable to variation. When its shape is not that of a cylinder, its diameter, as expressed in the descriptions, must be understood to be the diameter of its middle part.

The Gills are the flat, thin substances, found underneath the Pileus, and attached to it; they are of a texture evidently different from that of the Stem or the Pileus, they assume different colours in different species, and vary much in their respective lengths. Each Gill consists of two membranes, and between these the Seeds are formed. The Gills are always attached to the Pileus, and sometimes to that only, as at fig. (E e c) They often shoulder up against the Stem, and are fixed to it, as at fig. (A b) and frequently they are not merely fixed

to the Stem, but extended along it, downwards, as at (a) in the last mentioned figure. This is what we shall call a *decurrent* Gill. The *fixed* and *decurrent* Gills are attached to the Stem *only by their ends*, which are next to the centre of the Pileus; not by their edges, as is sometimes the case in some of the Agarics whose Pilei or Caps are nearly cylindrical. In some of these the edges of the Gills are pressed close to the Stem, and even adhere to it more or less in the young state of the plant, but separate before it attains its full expansion. This, therefore, is a very different kind of attachment to that which we mean to express by the terms *fixed* or *decurrent*.

Our secondary subdivisions of the Agarics are founded upon what has been just now explained, and are as follows:—

- | | | |
|--------------|---|---------------------|
| STEM solid; | { | 1. GILLS decurrent. |
| | | 2. GILLS fixed. |
| | | 3. GILLS loose. |
| STEM hollow; | { | 4. GILLS decurrent. |
| | | 5. GILLS fixed. |
| | | 6. GILLS loose. |

But the Gills, containing the fructification of these plants, are of the utmost importance, and therefore demand more particular notice. They vary very much in length, for though they all extend to the edge of the Pileus, they do not, except in a few instances, all reach to the Stem; moreover they are sometimes forked or divided, and sometimes connected or anastomosing one with another. All these circumstances are explained by the two circular figures at the bottom of plate XIX.—Thus

- (d.) Gills uniform. These uniform Gills sometimes seem connected together at the edge of the Pileus, as represented below (d).
- (e.) Gills in pairs.
- (f.) Gills four in a set.
- (g.) Gills eight in a set.
- (h.) Gills irregular, that is, no determinate number in a set.
- (i.) Gills branching.
- (k.) Gills branching and anastomosing.
- C. Gills loose from the stem, but the inner end fixed to a Collar which surrounds the top of the stem, though not in contact with it.

These peculiar circumstances of the Gills seem at first sight well adapted for subdivisions of the species, and also for the formation of specific characters; but they are so much subject to variation, that no use can be made of them for either purpose. Thus, the Gills called *uniform* are seldom strictly so, a shorter Gill new and then intervening. The Gills in pairs have place only in a few species, and are subject to vary; the Gills *four in a set*, occupy by far the greater part of the species; and those which have four in a set in the young state, and

very apt to show eight when more fully expanded, some of the longer Gills tearing from the Stem. Moreover, though four in a set be the predominant number in many of these plants, we often find but three, or even two, owing to the absence of one or more of the smaller Gills. The colour of the Gills is fortunately an obvious, and at the same time a *permanent* circumstance; and when we reflect, that their colour is principally, if not solely caused by that of the Fructification or Seeds within them, we might, *a priori*, have expected, what experience has proved to be the case, that it is the most fixed, the most certain characteristic, on which to found the distinctions of the species; and that this, together with the structure, will be at all times sufficient to afford permanent specific distinctions. It is allowed that these colours change when the plant begins to decay, but no Botanist would complain that the characters are wanting in a subject collected in a state past perfection. The colour of the *flat* sides of the Gills is what I wish to be attended to, because the colour at the edge, in some plants, is different, through all the stages of growth, and in others it changes sooner than that of the sides, evidently from the discharge of the Seeds when ripe. The colour of the whole of the Gills being sometimes influenced by the ripened Seeds, it is clear that this colour ought to be described, where it is liable to such a change, not only in the perfect and vigorous state of the plant, but also in its mature and nearly decaying state, taking its character from the former. Thus in several of the deliquescent Agarics, especially such as dissolve in decay to an inky liquor, the plants when very young have *white* Gills; these become *grey* when the Seeds are formed, and *black* when quite ripe, and the plant dissolves in decay. These circumstances may be properly noticed in the history of the plant, but no one would think of taking its character from its yet but half unfolded state, any more than from its state of decay; such a plant, therefore, must be placed amongst others whose Gills are *grey*.

The *Stem* is a less variable part than the *Pileus*; the shape, the proportions of its length to its breadth, and of both to the *Pileus*, afford tolerably distinctive marks, and its colours, though more changeable than those of the Gills, are, perhaps, rather more fixed than those of the *Pileus*.

The *Pileus*, or *Cap*, is the part of an Agaric the last to be attended to, and the least to be depended on. Its shape is either conical, convex, flat, or hollowed at the top like a funnel. It is constantly varying in the same plant, but is almost uniformly the same in the same species when the plant is in perfection, that is, when fully or nearly fully expanded, but before it exhibits symptoms of decay.

The *Colour* of the *Pileus* is often extremely uncertain, and in that case can no further be admitted into a character, than as it may serve to mark the varieties.

The *Viscidily*, or clamminess on the surface of the Pileus and Stem, frequently observed in some Agarics, has been made a part of their character; but it is not much to be depended on; for in dry weather some of the viscid species show no symptom of a moist or even adhesive substance, and in a moist atmosphere, many, at other times dry to the feel, become more or less viscid.

The *Lactescent*, or milky-juiced Agarics, at one time seemed to force themselves into observation, as laying claim to a well-founded subdivision; but further experience demonstrated, that neither those with a mild, nor those with an acrid, milky juice, were invariably milky. This was an unexpected circumstance, nor does it yet appear upon what it depends. Some plants apparently healthy and vigorous, shall show no signs of milk when wounded, whilst others of the same species, on the same spot, and at the same time, shall pour out their milk in abundance. It must be acknowledged, that this difference is not very common, but it certainly does occur.*

Such are the grounds of the present attempt to reduce the Agarics to a System; an attempt, which, if established, will greatly facilitate the investigation of the species; and, if it fail to merit the countenance of the public, will probably give birth to another and a better.

The author is sensible that some of the specific characters may be thought too long, whilst a few may be found too short; but these cannot be ultimately adjusted, until the discovery of new species shall cease. That many new ones still remain to be ascertained, is highly probable, since so many have occurred within his own observation, and that of his correspondents.

A few, and only a few, exceptions have occurred to the general laws of the System; and these may be mentioned here. *Ag. velutipes*, and *Ag. sulcatus*, have such a striking resemblance, that they must be pronounced to be the same, were not the Stem *hollow* in the one, and *solid* in the other. Can such a difference of structure be supposed to exist in the same species?† If this question be answered in the affirmative, the exception must be allowed, and extended to one or two more of the minuter species. The other exception depends upon the different colours of the Gills of *Ag. aurantius*. This sportive species disdains the rules of System, and exists under almost every kind of colour that can be imagined: the chief variations, however, to obviate difficulties, are inserted where the investigating Botanist would be led to look for them.

In the execution of the preceding plan, the references to figures are not very numerous, because peculiar care has been taken to avoid doubtful references. What use can there be in the insertion of a figure or a synonym with a note of interrogation at the end of it? If the Author, with all his attention collected upon the subject, and possibly with the plant before him, cannot decide, why perplex his readers by

* *Ag. rubescens*, and *Ag. xerampelinus*, are instances of this kind of deviation.

† That the solidity or hollowness of the stem does not invariably constitute a specific distinction, is now admitted by the most observant Fungologists: vid. Bulliard, *Ag. nigripes*, *sulcatus*, &c.; Sowerby, and Purton. *Ag. alliaceus*.

- desiring them to do so? In some cases it may be useful to refer to a figure which it is well known was not drawn for the plant in question. Thus, when a new species occurs, or one which has never yet been figured, a reference to a drawing which resembles it in size, and in habit, may be useful, if care be taken to announce the circumstance, and to point out the dissimilitudes.

The reader will find, on turning to other authors, that a number of references to the species before known, are omitted in this work; but he is not hastily to conclude that this has been in consequence of careless inattention. He may be assured that they have been examined, and are not omitted without a cause. Sometimes circumstances made it necessary more directly to point out these errors, but it was an invidious task; and believing that, notwithstanding his utmost care, the present work will be still liable to errors of the same nature, he has felt unwilling to censure his predecessors, to whose labours he should have thought himself greatly indebted, even were their errors ten-fold what they are.

The specific character of Linnaeus is always added, where no doubt existed of the identity of the species, and it was the Author's wish to have quoted all the *Agaries* of Ray under their proper heads, but the want of figures, and the brevity of the descriptions, deterred him from assigning a place to many of them. Here it may be observed, that where the descriptions of that admirable Botanist are sufficiently full, or where he could refer to a figure, the *Agaries* of the present day appear to be precisely what their predecessors were a hundred years ago. This it was thought necessary to remark, to remove the apprehensions of some who have been deterred from the study of these subjects, by a prevalent idea that they were for ever changing, and were consequently incapable of any fixed or settled character. It would not be difficult to point out the origin of this opinion, but it is sufficient to say that it is not true, and that no part of the Vegetable System is less liable to change, or more steady to the rules of a well formed method, than the *Agaries* are.

It must, however, be allowed, that new species of Fungi are daily discovered; but this may be owing chiefly to the greater attention that has of late been bestowed upon these subjects, and partly, as Major Vellay suggests to the introduction of so many exotic trees.

It remains now only to advert to the trivial names. This has been a much more arduous labour than can well be imagined. Much of the difficulties of Botanists, and many of the confusions of writers, have been owing to the application of different names to the same species, or of the same name to different species. The extent of this evil is hardly credible. Some species have six or eight different names, given by as many different authors, and in several instances the same name has been applied to ten or a dozen different plants. Surely it is time to put a stop to this useless increase of difficulties. In the execution of this work, the following rules have been adopted, and they are submitted to the consideration of others, who may be engaged

- 1st. When a well-known species occurs, to continue the name given it by its first inventor, unless obviously and highly improper, or unless a long continued attachment to another name has quite superseded the use of the former, or unless the former name had been previously appropriated to another species.
- 2d. • Never to change a name adopted by Linnaeus, except where his name included more than one species, and then to assign it to that which he has more particularly described.
- 3d. In naming a non-descript species, to use the most appropriate term that occurs, provided it be such as has not before been attached to any well-established species.

The discoverer of a new species may find some trouble in complying with these rules, but he will be rewarded by considering how much more trouble he will save to others, and how much his fellow labourers in the science will feel themselves obliged by his attentions.

The Genus *Boletus*, and the other Genera of the Order of *Fungi*, require no particular explanation, for the System adopted in the *Agarics* has been applied to them, as far as it was applicable; and imperfect as our knowledge of these plants at present is, such is the ardour of numbers in inquiries concerning them, that we may soon expect to stike out more complete characters of the Genera, as well as a more judicious distribution of the species.*

I. MISCELLANÆ. (Miscellaneous.)

Equisetum. *Lycopodium.* *Pilularia.*
Isetes.

II. FILICES. (Ferns.)

Ophioglossum. *Asplenium.* *Adiantum.*
Osmunda. *Blechnum.* *Trichomanes.*
Pteris. *Polypodium.*

III. MUSCI. (Mosses.)

Ptaseum. *Polytrichum.* *Hypnum.*
Sphagnum. *Mnium.* *Fontinalis.*
Splachnum. *Bryum.* *Lauxurzia.*

* (The most recent and pre-eminent systematic writer on this subject is Persoon, whose "*Synopsis Methodica Fungorum*" has obtained merited attention. E.)

IV. HEPATICÆ.

<i>Marchantia.</i>	<i>Torgionia.</i>	<i>Blasia.*</i>
<i>Jungermannia. .</i>	<i>Anthoceros.</i>	<i>Riccia. .</i>

V. ALGÆ.

<i>Lichen.</i>	<i>Ulva.</i>	<i>Conferva.</i>
<i>Tremella.</i>	<i>Fucus.</i>	<i>Byssus. .</i>

VI. FUNGI. (Fungusses.)

<i>Merulius.</i>	<i>Auricularia.</i>	<i>Lycoperdon.</i>
<i>Agaricus.</i>	<i>Peziza.</i>	<i>Reticularia.</i>
<i>Fistulina.</i>	<i>Nidularia.</i>	<i>Spharia.</i>
<i>Polctus.</i>	<i>Phallus.</i>	<i>Trichia.</i>
<i>Hydnum.</i>	<i>Clavaria.</i>	<i>Mucor.</i>
<i>Helvella.</i>	<i>Tuber.</i>	<i>Uredo.</i>

MISCELLANÆ.

EQUISETUM. Pl. 1. A. and Pl. 13. f. 1-6.

FRUCTIFICATIONS forming an egg-oblong, club-like, terminating spike.
Pl. 13. f. 1.

Individuals in whirls, on foot-stalks, target-shaped, flat, many-sided, furnished underneath with tubes.

Tubes from four to seven, parallel to the foot-stalk, angular, rounded at the end, opening on the inner side, containing a powdery mass. Pl. 13. f. 2.

LYCOPODIUM. Pl. 1. C.

FRUCT. forming oblong spikes, tiled with scales, or leaves, the fruit sessile within the bosom of the scales.

Capsules kidney-shaped, one-celled, with two elastic leaves.

Seeds very numerous, and extremely minute.

PILULARIA. Dill. 79. 1

FRUCT. globular, sessile within the leaves at each joint.

CALYX common, globular, woolly, four-celled; each cell inclosed within its own thin membrane, which opens in four directions.

BLOSS. none.

* (Sir J. E. Smith considers *Lycopodium* a Fern with axillary fructification: Dr. Hooker, after Swartz, constitutes a natural Order of *Lycopodina*. &c.)

STAM. *Filaments* none. *Anthers* in the upper part of each cell, numerous, inversely conical or pyramidal, tapering downwards, membranous, one-celled, opening crosswise. *Pollen* spherical, copious.

PIST. *Germens* in the lower part of each cell, numerous, obliquely spear-shaped, fixed by the slender end. *Style* none. *Summit* on the crown of the thicker end, conical, furrowed.

S. VESS. none, except the oblique pear-shaped membrane, empty in the lower, but inclosing the seed in the upper, part.

SEEDS globular.

Receptacle fleshy, fixed to the outside of each cell in the space between the two partitions, supporting the pistil and anthers.

ISOETES. *Dill.* 80.

Male flowers solitary, within the base of the inner leaves.

CAL. *Scale* heart-shaped, acute, sessile.

BLOSS. none.

STAM. *Filaments* none. *Anther* one-celled, roundish.

Female flowers solitary, within the base of the outer leaves of the same plant.

CAL. as above.

BLOSS. none.

PIST. *Germen* egg-shaped, within the leaf. *Style.* *Summit.*

S. VESS. *Capsule* somewhat egg-shaped, two-celled, concealed within the leaf.

SEEDS numerous, globular.

FILICES.

* Capsules with an elastic ring.

OPHIOGLOSSUM. *Pl.* 13. f. 7. 8. *Tourn.* 325.

CAPSULES numerous, united by a membrane into a two-rowed spike, nearly globular, opening crosswise when ripe.

SEEDS numerous, very minute.

OSMUNDA. *Tourn.* 324. 4.

CAPS. distinct, either forming a one-rowed bunch, or crowded on the back of a leaflet, or a segment of the leaf, sessile, nearly globular, two-valved, opening crosswise, (or lengthwise.)

SEEDS numerous, very minute.

** Capsules roundish, on foot-stalks, surrounded with a jointed elastic ring, and opening irregularly into two parts.

PTE' RIS: *Bolt.* 10.

CAPS. disposed in a line under the edge of the leaf, which is turned back.

ASPLE'NIUM. *Pl.* 13. *f.* 14. 15. 16. *Tourn.* 315. 319.

CAPS. disposed in straight scattered lines on the under surface of the leaf.

BLECH'NUM. *Pl.* 13. *f.* 9. 10. 11.

CAPS. disposed in lines parallel to the rib of the leaf; approaching.

POLYPO'DIUM. *Pl.* 13. *f.* 12. 13. *Tourn.* 314. 316.

CAPS. disposed in circular spots on the under surface of the leaf.

ADIAN'TUM. *Tourn.* 317.

CAPS. crowded into oval spots underneath the points of the leaves, which are rolled back.

TRICHOM'ANES. *Pet. Rter.* 13. 13.

CAPS. a turban-shaped scale, solitary, on the very edge of the leaf.

MUSCI.

PHAS'CUM. *Schreb.*

CAPS. egg-shaped, sessile, or on a short pedicle, sometimes with rudiment of a lid, closed on all sides, not opening.

MALE either star-like and terminating, or bud-like and axillary.

SPHAG'NUM. *Dill.* 32. 1. 2. 3. 6.

CAPS. in a circle, terminating the fruit-stalk, often surrounded at the bottom by an imperfect veil.

Fringe none.

MALE, axillary in the upper branches.

SPLACH'NUM. *Hedw. Stirp.* ii. 13. 14. 15.

CAPS. cylindrical, sessile, on a hollow, nearly globular, or umbrella-shaped receptacle. *Fringe* simple, with eight teeth, in pairs.

MALE, a bud with a star-like top; those on fruit-stalks only, fertile.

POLYTRICHUM. *Dill. 54. 1.*

CAPS. oblong, sometimes four-sided, sessile on a four-sided receptacle.

Fringe double, the outer with thirty-two short crooked teeth, united at the base; the inner a flat transverse membrane, adhering to the ends of the teeth of the outer. *Veil* hairy.

MALE star-like.

MNIUM. *Dill. 31. 1. 2. Hedw. Stirp. i. 37.*

CAPS. with a lid. *Veil* smooth. *Fringe* with sixteen teeth, sometimes with four.

MALE a circular bud, sometimes, though rarely, a knob; generally on a separate plant.

BRYUM. *Hedw. Stirp. i. 20.*

CAPS. egg-oblong. *Fringe* double, the outer with sixteen broad, acute teeth; the inner membranous, plaited, keeled, jagged; segments alternately broader and narrower.

MALE a knob, or a star; or a bud, on the same or on a distinct plant.

HYPNUM. *Hedw. Stirp. iv. 15.*

CAPS. oblong. *Fringe* double, the outer with sixteen broadish teeth; the inner membranous, equal, jagged; segments broadish, with hair-like segments betwixt them.

MALE bud-like, on distinct plants.

FONTINALIS. *Hedw. Stirp. iii. 12.*

CAPS. oblong, enveloped by a tile, Perichætium, and sessile on a short pedicle. *Fringe* double, the outer with sixteen broadish teeth, the inner like net-work.

MALE bud-like, axillary.

BUXBAUMIA. *Dill. 32. 13.*

CAPS. egg-shaped, oblique, depressed, ribbous on one side; in one species ordered. *Fringe* double, the outer with sixteen teeth; lopped; the inner membranous, plaited.

MALE star-like.

HEPATICÆ.

MARCHANTIA. (LIVER-GREEN. L.) Pl. 15. f. 60—67.
Dill. 76. 6.*

Male flowers either sessile or on a pedicle.

CAL. *Cup* a membranous border, open, lobed or entire, permanent, pimpled in the centre.

BLOSS. none.

STAM. *Filaments* none. *Anthers* numerous, pear-shaped, one-celled, buried in the substance of the calyx, but with a tube opening upon its surface.

Female flower on the same, or on a different plant.

CAL. *common*, large, star-like, conical or hemispherical, bearing the flowers underneath, the florets looking downwards.

Proper cup sessile, bell-shaped, with four or five teeth, membranous, coloured, tender.

BLOSS. *Veil* sessile, shorter than its proper cup, globular or oblong, membranous, tender and delicate, crowned with the style, at length tearing open at the top into two, three, four, or five segments, the style remaining on the top of one of the segments.

PIST. globular but oblong, sessile, encompassed by the veil.

Style either straight or bent, shorter, protruding through the top of the veil. *Stigma* simple.

S. VESS. *Capsules* sessile on a short and slender pedicle, inversely egg-shaped, one-celled, opening at the top with from five to ten teeth, the teeth at length rolling back.

SEEDS many, globular, fixed to elastic spirally convoluted threads.

Obs. The *Marchantia* of the author from whom it derived its name, has the male calyx on a foot-stalk, its centre marked with rays, and its border cut into eight segments. The female calyx has eight or ten divisions, the segments roundish, with an equal number of two-valved involucre, containing many flowers placed underneath, and alternating with the segments. Besides these flowers, there are also little bud-bearing cells, toothed at the edge.

The *Lunularia* of Micheli has the male calyx sessile, extending only half round; the female with four divisions forming a cross, the segments involving the florets.

The *Hepatica* of Micheli has the male calyx either sessile or on a foot-stalk, roundish; the female hemispheric-conical, with the cells underneath, one flower in each cell.

JUNGERMANNIA. (STAR-FIP. L.) Pl. 14. f. 29* to f. 59.
Dill. 76. 18.

Male flowers sessile, crowded together on the stem or the leaves.

CAL. hardly any

* The barren flowers are of so peculiar a conformation, imbedded in a disk like the seeds of Lichens, in a manner so contrary to all analogy, that Botanists can scarcely agree which are the barren and which the fertile flowers of this genus. (En-Intro. E.)

BLOSS. none.

STAM. *Filaments* hardly any. *Anthers* egg-shaped, one-celled, opening at the top.

Female flower on the same or on a different plant.

CAL. *Cup* upright, tubular, lopped, scooped or jagged.

BLOSS. *Veil* sessile, smaller than the cup, nearly globular, closed on all sides, membranous, delicate, crowned by the style, at length opening at the top.

PIST. *Germen* oblong, wrapped in the veil, sessile. *Style* short, straight, protruding through the top of the veil. *Summit* simple.

S. VESS. *Capsule* sessile on a long and slender fruit-stalk, globular, one-celled, opening at length longwise with four equal, expanding, permanent valves.

SEEDS many, globular, adhering to elastic twisted threads, fixed to some part of the valves of the capsule.

OBS. A single cup often contains several germens, but only one of these attains perfection.

These stemless *Jungermannia* have the anthers within the substance of the leaves, and the female flowers have no calyx, therefore it may be doubted whether these really belong to the genus.

TARGIONIA. Mich. 3.

Male flowers, solitary, at the end of the leaf or segments.

CAL. none.

BLOSS. none.

STAM. *Filaments* none. *Anthers* somewhat cylindrical, clustered together.

Female flower solitary, under the point of the leaf.

CAL. two-valved, compressed.

BLOSS. *Veil* nearly sessile, almost globular, membranous, closed on all sides, crowned with the style; opening.

PIST. *Germen* wrapped in the veil. *Style* short, rather bent. *Summit* lopped.

S. VESS. *Capsule* nearly sessile, globular, one celled; opening at the top; with four or more teeth. Mich.

SEEDS many, globular, fixed to twisted elastic threads.

OBS. I have never seen the capsule open, but can hardly doubt that it does open when the seeds are ripe.

ANTHOCEROS. (HORN-FLWVER. E.) Pl. 15 and 16. f. 68 to 72. Mich. 7. 2.

Male flowers within the substance of the leaf.

CAL. one leaf, entire, or cut into segments.

BLOSS. none.

STAM. *Filaments* hardly any. *Anthers* from three to eight, inversely egg-shaped, at the bottom of the calyx.

Female flowers on the same plant.

- CAL.** one leaf, cylindrical, lopped, the rim entire or toothed.
BLOSS. *Veil* fibrous, crowned with the style.
PIST. *Germen* short, conical. *Style* very short. *Summit* simple.
S. VESS. *Capsule* very long, awl-shaped, two-valved; partition loose, extending from end to end.
SEEDS many, globular, prickly, each fixed to an elastic twisted thread connected with the valves or with the partition.

BLA'SIA. Pl. 16. f. 73. 74. 75. *Dill.* 31. 7.

- Male* flowers solitary, scattered through the substance of the leaf.
CAL. none.
BLOSS. none.
STAM. *Filaments* none. *Anthers* nearly globular, buried in the leaf, covered with a thin skin.
Female flowers on the same plant.
 „ none.

- BLOSS.** none.
PIST. *Germen* egg-shaped, oblique, ending in an upright tube. *Style* very short and slender, fixed on the tube, soon falling off. *Summit* simple.
S. VESS. *Capsule* egg-shaped, slanting, one-celled, crowned on the outer side with a short tube, which is lopped and open at the end.
SEEDS many, reddish, but compressed, escaping through the tube.

RIC'CIA. Pl. 16. f. 76 to 80. *Schmid.* 44 & 45.

- Male* flowers, sessile on the surface of the leaf.
CAL. none.
BLOSS. none.
STAM. *Anthers* conical, lopped, sessile, opening at the top.
Female flowers on the same or on a different plant.
CAL. none, except a membranous cavity within the substance of the leaf.
BLOSS. none.
PIST. *Germen* turban-shaped. *Style* thread-shaped, upright, reaching to or above the surface of the leaf. *Summit* simple.
S. VESS. *Capsule* globular, one-celled, crowned by the style.
SEEDS many, hemispherical, on pedicles.

Obs. The little substances which Micheli regarded as anthers, much resemble, except in size, other little elevations shown by the microscope on the upper surface of the leaves, and appear too solid to be anthers. But having observed the tube on the top of the *germen* full of small granules, I have considered them as pollen, and the tube as the anther. The fructification should be examined before the *germen* becomes spherical.

ALGÆ.

LICHEN. (LIVERWORT CUP-MOSS, &c. E.) Pl. 1. E. F.
Pl. 16. f. 81 to 87.

Male flowers.

Vesicles in heaps, extremely minute, like meal, either thick set or scattered on the surface, the edge, or the points of the leaves.

Female flowers on the same, or on a different plant.

Receptacle roundish but flattened, either a convex *tubercle*, a concave *saucer*, or a *target* with the edge rolled back, and fixed to the leaf. These are often of a different colour to the leaf, and contain within them the seeds regularly disposed.

TREMELLA. (STAR-JELLY, &c. E.) Dill. 10. 14.

Substance uniform, membranous, jelly-like, pellucid.

ULVA. (LAVER, E.) *Fructifications* in a transparent membrane. Growing in water.

FUCUS. (SEA-WEED, &c.) Pl. 1. G.

Male flowers ;

Bladders smooth, hollow, with hairs on the inside.

Female flowers ;

Bladders smooth, filled with jelly, sprinkled with perforated granules containing the seed.

SEEDS solitary.

CONFERVA. Dill. 2. f. 4 & 5. f. 25.

Fibres simple, uniform, hair-like, or thread-like.

These fibres are either uniform or jointed.

BYSSUS. Dill. 1.

Fibres simple, woolly.

(According to recent arrangement all are excluded from this genus whose filaments are not jointed ; though some few other new genera likewise exhibit articulations, E.)

FUNGI.

MERU'LIIUS. *Fl. Dan.* 384.

PILEUS with rising veins underneath, of the same substance with the rest of the plant.

AGAR'ICUS. (MUSHROOM, FROG-STOOL, &c. E.) *Pl.* 1. H. *Pl.* 19. *Pl.* 16. f. 88 to 91.

PILEUS with gills underneath.

Gills differing in substance from the rest of the plant, composed of two lamina.

SEEDS numerous, between the two lamina or plates which constitute each gill.

FISTULI'NA. *Bull.* 464.

PILEUS with distinct *tubes* underneath.

SEEDS in the tubes.

BOLE'TUS. (TOAD-STOOL, &c. E.) *Bull.* 60.

PILEUS with united *tubes* underneath.

SEEDS in the tubes.

HYD'NUM. *Bull.* 34. *Curt.* 190.

PILEUS horizontal, with awl-shaped, solid, soft, prickle-like substances underneath.

SEEDS on the surface of the prickle-shaped substances.

HELVEL'LA. (TURBAN-TOP. E.) *Bull.* 466 & 190.

PILEUS smooth on both sides.

AURICULA'RIA. (EAR-WORT. E.) *Bull.* 4

Fungus flat, membranous, fixed by its whole under surface, but at length becoming detached and inverted.

SEEDS discharged slowly from what was the upper, but now become the under surface.

PEZI'ZÄ. (BARTH-CUP. E.) *Bull.* 497.

Fungus concave, sessile, or on a stem.

SEEDS on the edges and the upper surface, discharged by jerks.

NIDULARIA. (NEST-WORT. F.) *Bull.* 488.

Fungus bell-shaped, leather-like, sessile.

CAPSULES large, flat, fixed by the pedicles to the bottom of the bell.

PHALLUS. (MOREL. E.) *Curt.* 199.

(PILEUS on a stem, smooth underneath, cellular on its upper surface : the cells containing sporuliferous slime. E.)

CLAVARIA. (CLOB-TOP. E.) *Schmid.* 15.

Fungus upright, smooth, oblong, surface uniform.

SEEDS emitted from every part of the surface.

TUBER. (TRUFFLE. E.) *Bull.* 356. *Bolt.* 116.

Fungus stemless, solid, fleshy, not becoming powdery, nor opening at the top.

LYCOPERDON. (PUFF-BALL. E.) *Bolt.* 117.

Fungus roundish, opening irregularly at the top, full of powder-like impalpable seeds intermixed with wool-like filaments.

RETICULARIA. (SEED-NET. E.) *Bull.* 476. 1. *Bolt.* 134.

Fungus soft and gelatinous, becoming firm and friable, opening indiscriminately.

SEEDS entangled in wool-like fibres, net-work membranes, or leather-like cases.

SPHÆRIA. (SEED-BALL. E.) *Bolt.* 180.

Fungus of various shapes.

Fructifications mostly spherical, filled with a gelatinous, or powdery mass, (the seeds,) without fibres, opening at the top. F.)

OBS. The capsules are often immersed in the substance of the plant, so that their orifices only are visible.

TRICHIA. (HAIR-GLOBE. F.) *Bull.* 502. 1.

CAPSULES sessile or on a stem, globular, or oblong, mostly fixed to a membranous base.

SEEDS escaping from the whole surface of the capsule through the interstices of the fibres.

MU'COR. (MOULD. E.) *Mich.* 91. 2 and 95.

(SEEDS numerous, naked, or in transparent vesicles, supported on fruit-stalks: pedicles simple or branched, tubular, articulated. E.)

(URE'DO. (BLAST. E.) *Pers.*

Fungus parasitic, very minute, undermining the epidermis of the leaves and stalks of plants, bursting forth in longitudinal or oval patches.

Fructifications clavated heads, opening either ~~laterally~~ or at the top, giving forth numerous seeds without fibres intermixed. E.)

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